

620

# Contractors and Engineers

magazine of modern construction

MARCH 1955

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A Caterpillar 37 tractor with  
Caterpillar attachment handles  
shown also for a gas line  
in Minnesota. The crane that  
follows works the loads with  
Caterpillar welding generators  
on a DMC track. Page 40



Constructing a Hot-Mix Texaco Asphaltic Concrete Pavement on 10 miles of US Route 87 in Colorado, after widening old concrete road from 18 to 28 ft.

**Contractor**  
W. HODGMAN & SON CO.,  
Fairmont, Minn.



The Colorado State Highway Department widened ten miles of US Route 87 south of Longmont from 18 to 28 feet last year. A hot-mix Texaco Asphaltic Concrete pavement was then laid over the full width of the highway to a compacted thickness of two inches.

By making use of aggregate from local pits in the asphalt mix, the State was able to obtain a dense-graded, durable wearing surface at relatively low cost. The maximum size of the aggregate used was  $\frac{1}{2}$ -inch, with 56 percent passing a No. 4 screen. A Texaco asphalt cement having an 85/100 penetration was used as binder.

This Colorado highway project is an excellent

example of how inexpensive local aggregates can be combined with Texaco Asphalt Cements, Cutback Asphalts and Slow-curing Asphaltic Oils in the economical construction of roads, streets and airports. Employment of such an aggregate with the Texaco asphaltic product best suited to it enables state, county and local officials to obtain the maximum mileage of improved roads for available highway dollars.

Helpful information on methods and materials recommended for all types of asphalt road and street construction is available in two free Texaco booklets which our nearest office will be glad to send you.

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# TEXACO ASPHALT

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# Contractors and Engineers

magazine of modern construction

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## Labor backs the road program

This road sign pointing to faraway places causes many a raised eyebrow, but it is neither a joke nor a mere publicity gag. Nor does it imply that travel in this jet age in effect puts China, for instance, only 94 miles away. Located at a highway intersection in the state of Maine, the sign gives actual distances to small villages named after better known but more remote places.

Not only vast oceans stop us from contemplating road links to these foreign countries. The 10-year domestic highway program facing us is enough to occupy the full thoughts, time, talents, and resources of the road-building industry of this country. One problem, however, which should not bother road builders this coming construction season is labor.

Last month at the annual meeting of the American Federation of Labor's executive council in Florida, four of the biggest unions in the construction field made a no-strike compact. The big four are: International Brotherhood of Teamsters; United Brotherhood of Carpenters and Joiners; International Union of Operating Engineers; and the Building Helpers and Common Laborers International Union. Numerous other smaller unions pledged similar action. This move should practically guarantee their union members steady employment under the "grand plan" of President

Eisenhower's \$101-billion highway program.

Contractors employing AFL union help can submit job bids with the assurance that their equipment, key personnel, and material will not be tied up by work stoppages for higher wages, shorter hours, or terms other than those previously negotiated. If they know that their labor costs will not suddenly and unexpectedly spiral, contractors can keep their bid prices down. Lower bid prices naturally mean that the money saved can be spread around by the agencies concerned over additional road construction for the benefit of union labor as well as the public. Contractors employing AFL craftsmen who pledge such cooperation can thus compete successfully with contractors who employ men from non-AFL unions or even non-union labor.

Despite many labor-saving factors, such as prefabrication, increased mechanization, and larger and more efficient equipment used in highway construction, there will still be some labor shortages in an expanded road program. The most critical shortage will probably be among equipment operators. If labor cooperates with the contractors these shortages can be overcome, and the big road program can be realized. Both contractors and their construction personnel should fare well in the years ahead.

## NEWS AND VIEWS

Almost a month behind schedule, the President's multimillion dollar road program went to Congress late last month. The delay—whether due to last-minute revisions or to more pressing international developments—emphasizes again that the legislation is going to have rough sledding before securing Congressional approval. Sharp discussion still centers on what it will cost various levels of government to finance the job and on the free vs. toll road aspects of the proposal. Another sore spot is that financing is being done outside the U. S. debt limit of \$281 billion. Numerous groups—and notably those seeking federal money for the nation's school system—are already clamoring for "outside the debt limit" financing for their pet projects.

Russia's manufacturing capacity cannot be accurately estimated, but an incident which occurred at the USSR exhibit at the Damascus International Fair in Syria last September affords something of a glimpse behind the Iron Curtain. The only piece of earthmoving equipment on exhibi-

tion not inferior to U. S. makes was the C-80 tractor, a 90-drawbar-hp unit. The exhibition tractor was sold, however, and agents could not even promise to make deliveries on this model.

U. S. equipment makers, by contrast, are echoing the optimism of the construction industry concerning its ability to carry out the new 10-year road program. The job will require \$33 billion worth of earthmoving equipment. At an annual rate, this comes to more than three times last year's volume of \$1 billion worth of machines.

A rival of TVA—in more respects than size—is the new development program being planned by Colombia, South America. Designed to develop the waters of the Cauca River, the project has been launched by the Autonomous Regional Corporation of the Cauca. Colombia has not only taken over the idea of TVA, but has retained former TVA chairman David E. Lillenthal as an advisor for the program. Two of the three engineering firms which will help train the corpo-

ration's personnel and engage in flood control, irrigation, and related types of work, are U. S. concerns—Gibbs & Hill, Inc., and Knappen-Tippetts-Abbott-McCarthy—both of New York City.



The first permanent structures built on the unstable Greenland polar icecap, these 18-foot-diameter metal buildings at the new U. S. Army base are designed to sink several feet a year into the ice. They employ the submarine's pressure-hull principle of construction, and are accessible through hatches which may be lengthened as the shelters settle.

Caterpillar tractors, a No. 10 scraper, and No. 12 motor grader work in one of the cuts in the Parayba Valley. For most of its length, the railroad parallels the main highway between Rio de Janeiro and Sao Paulo.

## Deep cuts scar mountains for relocated railroad

**More than 800,000 cubic yards of earth is moved as right-of-way is straightened for Brazilian line**

Relocation of a stretch of railroad almost four miles long—a job involving the excavation of more than 800,000 cubic yards of earth—is now nearing completion in the mountainous country along the Brazilian coast. This work on the section of the 500-kilometer railway which runs between the major cities of Rio de Janeiro and Sao Paulo, is being done by the South American concern of Constructora Hepacare, Ltda.

The current job is only part of the task of modernizing the Central Railroad of Brazil, a government-operated line. Work on straightening and expanding the line will be continued indefinitely under the improvement program which the government has been carrying on since 1943.

For the more than 800,000-cubic-yard earthmoving job, the contractor brought in a fleet of five Caterpillar D8 tractors equipped with four bulldozer blades and one pusher, three D7 tractors, three DW10's with No. 10 scrapers, a Cat No. 12 motor grader, and three Heiliners. Today, within the short space of four months, most of the job of gouging deep cuts in the rough terrain has been completed, with men and equipment working 10 hours per day on a 6-day-week work schedule.

Perhaps the most important line in South America in terms of freight and passenger volume, the Central Railroad of Brazil provides transpor-



**OLD EARTH-MOVING HANDS JOIN HARD-ROCK MEN TO MAKE "UNPROFITABLE" IRON MINE PAY OFF!**



The Benson Mines, at Star Lake, deep in New York's Adirondacks, have been worked since pre-Revolutionary days—but working the low-grade, non-magnetic ore by old-time methods wouldn't pay today. Now a 30-unit fleet of 22-cubic-yard trucks, rolling on Goodyear tires, moves mountains to lay the ore body bare. 4-ton drop-balls, with old tires as shock absorbers (as shown above), break blasted rock to crusher size—and ingenious spiral troughs find "pay dirt" by the ton!



Besides stripping overburden of earth, trees and brush, earth-moving hands have endless road-building work—an earmark of open-pit mining.

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world's most durable tire cord,  
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3-T NYLON, made only by Goodyear's *patented* process, can take terrific punishment. Users say bruise-breaks are practically unknown and tire-growth is permanently controlled. 3-T NYLON is also *heat-resistant* that users say ply-separation, flex-failures and heat-blowouts are virtually eliminated! Combined with Goodyear's new, tougher rubber compounds, 3-T NYLON makes Goodyear tires the toughest, most durable—and saves you plenty with more re-lugs and recaps. Check into this before buying or specifying *any* new tire. Goodyear, Truck Tire Dept., Akron 16, Ohio.

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Grading work here is handled by a D8 tractor with bulldozer and a Caterpillar tractor-scraper combination.

tation not only for a huge number of persons, but also for the movement of steel from the Volta Redona mills to the industrial centers of Sao Paulo and Rio. The road is the only year-round route which can be used for steel shipments to both cities.

Most of Constructora Hepacare's job is being done in the Parayba Valley where the road winds around mountains near the coast. Straightening and shortening the line in this section and reducing grades will greatly reduce traveling time on the run between Rio and Sao Paulo.

THE END



# Big rigs push grading on Wanship Dam job

**Fast stripping and blasting ready dam base and abutments for early fill work; highway is diverted around reservoir**

by RAY DAY

Fifty miles east of Salt Lake City, Utah, on the Weber River, the Wanship Dam project is well along as the result of unusually fast initial work. Designed by the U. S. Bureau of Reclamation as a part of the Weber Basin Reclamation Project, the dam and all directly related works are being built for the federal government at a contract cost of \$2,423,000. The Utah Construction Co., Salt Lake City, holds the USBR contract.

The rapid head start which has been made is in keeping with fierce competition which marked the contract bids. There were 25 bidders for Wanship Dam, and the Utah Construction Co.'s low bid left \$500,000 "on the table" below the next lowest bidder. The company's successful contract bid was about 32 per cent under the government's estimate of \$3,603,210.

Utah's job includes construction of the dam, the outlet works, and the spillway. Also currently under way is another fast-moving job: the relocation of U. S. 189 around the reservoir area. That work is being underwritten by the Bureau of Reclamation, but the direct contract for the job is between W. W. Clyde & Co., Springville, Utah, and the Utah State Road Commission. It is, however, one of the definite highlights of the current project.



Pulled by a pair of Caterpillar D8's, this hydraulically-controlled Wadsworth ripper sinks its tooth into a rocky cut as U. S. 189 is relocated around the dam site.

## Dam Design And Purpose

Wanship Dam is situated in the high mountainous watershed of the Weber River, some 60 miles above the point where its reservoir waters will eventually be used. The dam has been planned to trap surplus spring flood runoff, store it in its 60,000-acre-foot-capacity reservoir, and then feed it down gradually toward thirsty acres in the farmland section bordering along Great Salt Lake from Ogden south to a point near Bountiful, Utah. Long-standing water rights, held by private and irrigation district



As stripping operations on the Wanship Dam base move along, a P&H dragline with 2-yard Esco bucket dumps to a 30-yard bottom-dump Euclid. Eight of these huge hauling units moved stripped material for the center impervious core.



Rocky material just ripped out by the Wadsworth ripper (left) is picked up by a Caterpillar DW21 which is being push-loaded by an International TD-24.

interests, already have the normal flow of Weber River completely allocated. So Wanship will stand to intercept only the above-normal flows.

The dam will be a combination rolled-earth and rockfill structure 156 feet high from streambed and about 2,000 feet long. Its straight crest will top off with a width of 35 feet, and will accommodate an access road.

Zone 1, or the center impervious core, consists of a very fine lean clay of relatively light weight. It is to be compacted to a minimum of 96 per cent of the maximum density obtained by the USBR Proctor compaction test, which will give it a dry per-cubic-foot weight of about 105 pounds. Zone 2 will consist of sand, gravel, and cobbles compacted in 12-inch layers by four passes of a 40,000-pound crawler tractor. Zone 3 is a free-draining rocky material, including excavation from the outlet works, the spillway, the outlet tunnel, and some parts of the dam foundation. Backslope ratio is 2 to 1, and the reservoir side slope is 3 to 1. The elevation of the dam crest is 6,055 feet above sea level. Zone 1 material will reach down to solid rock to form an impervious key after a trench has been excavated 50 feet wide at the bottom, with 1½ to 1 side slopes up through weathered material.

Wanship Dam is to have a circular tunnel-type outlet works 12 feet in diameter, with a normal trash rack and inlet tunnel. Water will be conducted through a pressure tunnel to a gate chamber, and from the gate chamber down through an 85-inch

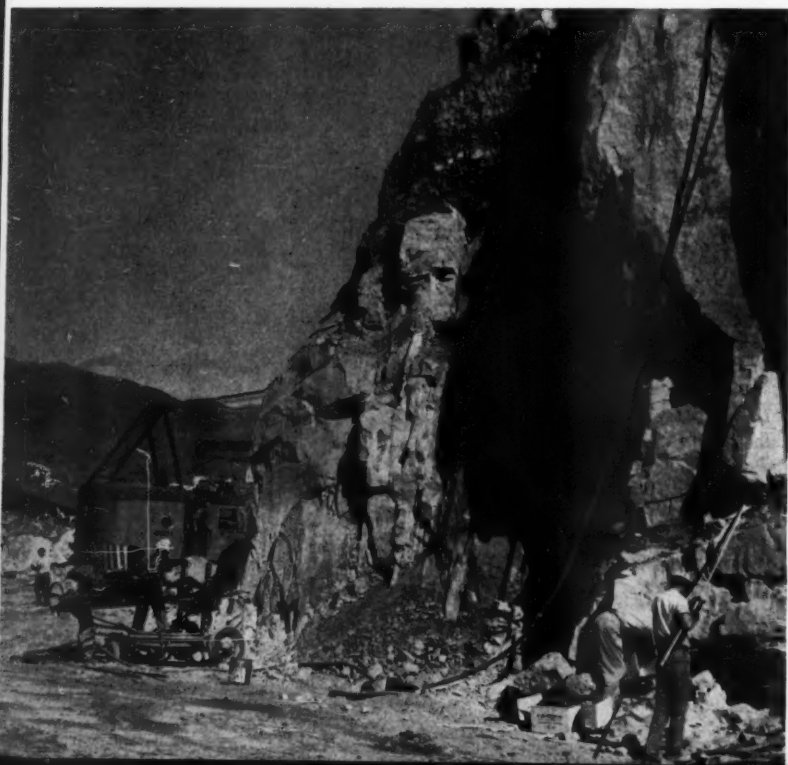
steel pipe. Capacity of the gate chamber will be approximately 1,000 cubic feet per second, after a 5×6-foot pressure gate has been fully opened. The 85-inch steel pipe branches at its lower end to two legs. Each leg has a gate 3 feet 6 inches square for regulating outlet stream flow. There is to be a false stub leading from this high-pressure pipe, blocked off temporarily, which will serve any future power plant.

Wanship's spillway is an uncontrolled-type concrete-lined channel with a bottom width of 75 feet. It has vertical walls with counterforted sections at inlet and stilling basin ends. The stilling basin is an ordinary baffled section designed to dissipate the energy of fast-flowing water through a hydraulic jump. By moving the site of the spillway over to a natural sandstone ledge, leaning at just the right angle, Bureau of Reclamation engineers were able to get a faster job at less cost.

The bedrock under Wanship Dam consists of sandstone, siltstone, and shale. The best bedrock is a hard, gray, massive, cross-bedded sandstone which is dense and makes a good foundation. Not so good are the typical black carbonaceous shale found in the area, or the occasional ledges of soft coal.

## Dam Design And Purpose

The dam contractor moved in with a sizable fleet of equipment almost immediately after the contract was awarded. In order to beat fall rains and get the dam ready for a peak construction season in 1955, Utah's officials decided to make a running



A crew loads drill holes to blast bedrock from the abutment as Ingersoll-Rand X-71 wagon drill works at left.

start and to move the early work as rapidly as possible. Initial stripping of the dam site and riverbed, therefore, moved rapidly from that date.

For short-haul work, there were five Gar Wood scrapers with Allis-Chalmers HD-20 tractors. A Euclid 54-inch loader was on the job, along with eight 30-yard bottom-dump Euclids, to move zone 1 material. Prior to that work, a 2-yard P&H dragline was used with a 2-yard Esco bucket to load these Euclids.

A comprehensive system of haul roads is kept smooth with the blades of Caterpillar No. 12 motor graders.

Major stripping over the right abutment also was begun almost immediately. This abutment consists of the same type of parent bedrock, which must be cleaned off thoroughly to remove all weathered or otherwise unsuitable material. Stripping was started from the top elevation of the dam on the abutment, and moved down in a single lift.

Drilling was handled by an Ingersoll-Rand X-71 wagon drill carrying 24-foot Crucible drill steel and Ingersoll-Rand rock bits. The holes were drilled into the abutment rock at a slight angle and column loaded almost to the surface with Atlas Gelodyn No. 3 powder. An electric blasting machine was used to explode the shots, after which the broken rock was loaded by a Northwest 80-D shovel carrying a 2½-yard Esco dipper. Five 11-yard end-dump Euclids were available for use under this shovel. Some of the broken rock from this operation was stockpiled for later use, while some was placed directly in the zone 3 lifts.

With earthfill operations expected to reach a peak this season, a Marion 151-M dragline has been trucked to the job site in several pieces and assembled by a Caterpillar D8 and a Bucyrus-Erie 22-B crane.

#### Diversion Tunnel

One of Utah Construction's most important items in the early stages consisted of excavating the outlet works tunnel—some 866 feet long—which passes underneath the right abutment of the dam. Supervision of this work had been delegated to one of Utah Construction's veteran tunnel men, H. C. Miller. In less than a month, Miller had shoved the tunnel excavation in about 160 feet and was moving ahead rapidly. Excavation was completed October 21.

The tunnel was worked from the downstream heading only. Since the rock was not hard, miners had quite an easy time. Drilling was done from a jumbo-mounted rig carrying five Gardner-Denver 89's (a 3½-inch machine) on Cleveland jibs, with Crucible drill steel and Liddicoat throwaway bits. Supplying these machines with compressed air was a Joy 1,800-cfm-capacity compressor driven by electric power.

The blast hole pattern at the heading consisted of a 40-hole setup, pulling the center first with a hammer cut. Relievers, arch holes, rib holes, cut holes, and lifters were then kicked in toward the center breakout and in conventional tunnel-excavation manner. Atlas Rockmaster delays were used for this purpose, and Gelex No. 3 gelatin-type powder was used for loading. The exploding ratio was approximately 1.2 pounds per cubic

(Continued on next page)

Drilling of the 866-foot-long outlet works tunnel on the Wanship Dam project was done with this jumbo-mounted series of five Gardner-Denver 89 drills mounted on Cleveland jibs. The rig stands on a track just outside the tunnel mouth.



## HOW TO DO 4 JOBS WITH 1 MACHINE



Here's a borrow pit a half-mile from the water works in Kansas City, Missouri. 80,000 yards of fill are being hauled from it, to be placed around the water works' settling tanks. A housing project will go onto the leveled area.

Doing four jobs at once in this pit is a CAT\* Diesel No. 112 Motor Grader.

It scarifies constantly—since the dirt in the pit is hard clay. It push-loads a No. 15 Scraper. It keeps the borrow pit clean. And it grades the area as the job moves along.

Working with the No. 112 for Miller Brothers Construction Co., Kansas City, are two DW10 Tractors with No. 15 Scrapers, and a D7 Tractor with bulldozer.

"In the eight years we've been operating," W. F. Miller says, "we've found our Cats to be our most durable and rugged machines."

One reason—in the case of the No. 112—is this: built and serviced *entirely* by one organization, the Cat Motor Grader is carefully balanced, power with weight

with speed. Its engine, controls, and frame and circle assembly are all designed specifically to work with one another. This integral engineering—with matched components—helps give you that durability and ruggedness Mr. Miller is talking about.

There are other reasons, of course, and your Caterpillar Dealer will be glad to discuss them with you. Better still, ask him to demonstrate. That's really the best way to size up this big yellow machine.

And remember, your Caterpillar Dealer is always ready with prompt, genuine parts service, too.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

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MOTOR GRADERS EVER  
BUILT ARE STILL IN USE**



(Continued from preceding page)

yard of rock. Under Miller's direction, the heading was loaded so that no excessive throw resulted.

For tunnel excavation, there was a single Elmco 40 mucking machine, and ten Sanford-Day cars, pulled in two trains by two Greensburg locomotives. At first a hand switch was used, but as tunnel excavation moved further underneath the hill a California switch was substituted. The trainloads of material were hauled to zone 3, where Caterpillar tractors with dozers shoved the broken rock directly into layers in that zone for dam-building material.

Once the outlet tunnel excavation was completed, the lining was placed and Weber River diverted in a one-stage move. Bureau of Reclamation plans call for a cofferdam of zone 1 or impervious material to form a part of the upstream toe. This material was expected to be placed as soon as the outlet tunnel was completed.

#### Road Project

The excavation performance which ranks head and shoulders above anything else on this project for speed and organization is the relocation of U. S. 189, which W. W. Clyde & Co. is doing around the reservoir area. Clyde bid on and won the road-job contract after an unsuccessful bid on the dam itself. Fifty days after starting the job, the company had moved fast enough to earn \$169,000 of a \$660,000 contract.

Under the personal supervision of Blaine Clyde, the job was in progress over virtually its entire length in less than six weeks. Three Caterpillar D8 tractors and dozers pioneered many of the cuts. The relocated highway passes through a series of sharp ridges and deep canyons, and while the hauls are not too great, there are some deep cuts, some high fills, and some hogback ridges which need extensive preliminary work before hauling equipment can get in.

Clyde's main equipment-hauling fleet consists of five units: three LeTourneau-Westinghouse D Roadster Tournapulls and two Caterpillar DW21's. Assisting these units in their loading is a pair of International TD-24 tractors. In some cases it has been necessary to pull two D8's back to the loading point to help out with a huge single-tooth Wadsworth ripper, mounted with its hydraulic control on the back of one of the D8's. There is also an Insley ripper on the job.

Excellent use has been made of both pieces of ripping equipment, especially in soft shale, coal, and some of the sandstones. Of 525,000 cubic yards of roadway excavation, Clyde's officials estimated that approximately 25 per cent would be in rock sufficiently hard to require shooting. The company brought in a 600-cfm Gardner-Denver compressor, a 500-cfm Gardner-Denver machine, and a 105-cfm Worthington, along with two Gardner-Denver wagon drills and the necessary steel and bits. Several Gardner-Denver jackhammers were brought in for secondary shooting. Tungsten-carbide bits were used on the wagon drills, and ordinary rock bits on the hand-held jackhammers. Powder holes went down rapidly, even in hard places, and Giant No. 3 powder for blasting was hauled in by

truck. A Northwest 80-D shovel, carrying a 2½-cubic yard Esco dipper, was moved in. Two LeTourneau Tournarockers and one International 8-yard truck also were on the job.

Much of the blasted rock broken out of the cuts is expected to be used for riprap along the reservoir sides of some of the fills. A rock blanket at this point is necessary to protect the new earth embankments from wave action in case of high winds over the reservoir area. Some 33,000 cubic yards of riprap have been specified for this purpose.

The compaction of earth embankments meets the Utah State Road Commission's current standards, and can be developed by the two sets of McCoy sheepfoot rollers which Clyde has assigned to the project. There are also three water wagons, two of 2,250-gallon capacity and one of 3,000-

gallon capacity, to help out in case the moisture in the earthfills is deficient. Considerable hand tamping also has been necessary, particularly around the numerous Armeo drain

pipes throughout the job. The two largest pipes are 10-foot-diameter Multi-Plate culverts, one 200 and one 210 feet in length. Dirt around these and other culverts has been back-



## Follow this simple rule

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# TEXACO

CONTRACTORS AND ENGINEERS



Prompt maintenance is essential to the stepped-up job of relocating U. S. Highway 101 around the Wanship Dam reservoir. A service crew from Bailey, Inc., a tire dealer at Salt Lake City, repairs a blown-out tire on a DW21.

filled with the help of a Barco hand-held tamper.

The production of 80,000 tons of gravel ballast course for the flexible base of the new road will be a job

for Clyde's Cedarapids crushing plant. The aggregate base course is to be finished 28 feet wide. Sometime during the coming season it will be topped out with a 3-inch blanket of road-mixed bituminous pavement.

Clyde's work is moving fast. Long before the reservoir rises to its elevation, the newly relocated highway will be in service.

#### Personnel

Wanship Dam and appurtenant works are being built under the administrative direction of the Salt Lake City Regional Office of the Bureau of Reclamation, with E. O. Larson as Regional Director. All construction work is under the general direction of L. N. McClellan, chief engineer and assistant commissioner of the Bureau of Reclamation in Denver.

Field officials for the Bureau of

Reclamation's Weber Basin Project include project engineer C. D. Woods, construction engineer L. R. Dunkley, and resident engineer A. H. Peterson, the latter in charge of the Wanship Dam with his field office near Wanship, Utah.

THE END

#### New Armco Facility

Construction work started last month on the new \$300,000 steel fabricating plant Armco Drainage & Metal Products, Inc., is building just outside Davis, Calif.

The company, a subsidiary of Armco Steel Corp., Middletown, Ohio, expects the facility—three factory buildings and an office building—to be completed by midsummer. When completed, the plant will bring the total number of Armco Drainage plants in this country to 50.

#### Jurisdictional Change In Corps of Engineers

All U. S. Corps of Engineers functions in Texas coastal areas have been placed under the supervision of the Galveston District in a change announced recently by Col. L. E. Seeman, southwestern division engineer at Dallas. The move primarily involves transfer of flood-control responsibility from the Fort Worth district to the Galveston district.

Effected "in the interest of economy and convenience for people in the coastal area," the move gives the Galveston district, under Col. W. P. McCrone, jurisdiction of flood-control work on the coastal reaches of streams emptying into the Texas Gulf. The Galveston district already has responsibility for navigation and major drainage functions along the Texas coast, as well as for military construction in southern Texas and Louisiana.

Studies on the proposed Lake Liberty project in the lower reaches of the Trinity River will be taken over by the Galveston district. Certain other projects, however, will remain in the hands of the Fort Worth district for the time being.

Construction of an emergency levee project at Alice, Texas, will be completed by the Fort Worth district before transfer, although some Galveston district personnel already have been assigned to the project. The Fort Worth district also will retain responsibility on an emergency levee project at Kingsville, Texas, through the preliminary report stage.

Col. Harry O. Fischer is Fort Worth district engineer. The district is responsible for flood-control work down to the coastal reaches of streams in southern Texas, as well as for military construction in much of central and west Texas.

#### HRB Bulletin Treats Analysis of Soils

Improving the dispersion of soils for measuring grain-size distribution is covered by two papers in "Laboratory Analysis of Soils, Grain Size and Liquid Limit", Highway Research Board Bulletin 95.

The papers are concerned with developments in dispersing agents used in particle-size analysis and with deflocculating agents for mechanical analysis of soils.

A third paper, "Rapid Methods for Determining Liquid Limits of Soils", is devoted to extending the usefulness of the liquid limit test by reducing test work and making it possible to test a greater number of individual samples.

Copies of the bulletin, priced at 60 cents each, may be ordered from the Highway Research Board, National Research Council, 2101 Constitution Ave., Washington 25, D. C.

#### Scott Joins L. B. Foster

Charles Kenneth Scott has joined the L. B. Foster Co., Pittsburgh, Pa., suppliers of steel sheet piling and pipe.

Mr. Scott, a graduate civil engineer, will make his headquarters in the company's New York office. Before joining the company, he was in charge of maintenance of way for the eastern division of the Erie Railroad.

## le and CUT COSTS



LUBRICATE YOUR AIR COMPRESSORS with the oil that will keep them clean and rust-free—*Texaco Regal Oil R&O*. This premium-quality oil keeps costs low because it keeps valves clean for proper functioning, keeps lines clear and piston rings free, and prevents rust and harmful deposits in the system.

*Texaco Regal Oil R&O* is a superior oil—a special refinement of choice base stocks, with effective additives and extra processing to enhance its fine natural qualities. There is a complete line of *Texaco Regal Oils R&O* to meet the requirements of all types and

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To guard your drills against wear and rust, use *Texaco Rock Drill Lubricant EP*. Its fine extreme pressure properties assure longer drill life, less work for your "drill doctor."

Get in touch with a Texaco Lubrication Engineer and let him help you cut maintenance costs on all your equipment. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

★ ★ ★

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

# Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

Years that begin actively, as did 1955, may be expected to show some financial strain and stress during the first quarter. One of these points of stress which will affect construction for some weeks to come is in the municipal bond market—heavy construction's chief source of funds.

**Municipal bonds**—as reported last month—are being issued so swiftly that there is a possibility of demand being filled and "digestive periods" becoming due. Just now, the market is still holding up, but dealers are looking askance at their heavy inventories. All bond prices have tended to soften, particularly since a huge block of 3 per cent Treasury bonds came out as part of a \$15 billion operation between February 15 and mid-March. However, the government securities are moving satisfactorily and municipalities continue to find buyers in a weekly average volume of \$130 million at only fractional recessions. If this output is kept up—and the biggest bond houses say it will be—the current year will have to absorb more than \$6.75 billion worth of public securities.

**Construction's cash drawer** should be reasonably filled with these dollars. Irrespective of savings and loan capitals (primarily for mortgages), mutual-savings bank deposits are increasing by \$2 billion a year. In addition, commercial-bank saving deposits and private pension funds are piling up at a \$5 billion annual rate, while life-insurance assets are being similarly augmented, with fire and casualty companies plus various long-term accumulations contributing \$3 billion. Add to this \$15 billion total of "fresh" investment funds some \$2.25 billion in maturing long-time municipalities, and at least \$17.25 billion is reasonably available from major sources.

How much of this truly impressive sum will go into public securities and how much into private and semi-private obligations—such as mortgages and corporate bonds—depends on the judgment of investors. Their decision, as always, favors tax-exempt state and municipal issues. Admittedly a large proportion—perhaps \$7 billion—will normally flow into investments other than state, city, and related obligations. This still leaves funds more than adequate for estimated requirements.

Such margin seems to justify leading investment bankers in their prediction of a "continued high volume" of state and other tax-exempt securities during 1955. It seems that, construction work will scarcely slacken since needed money is available. Qualified observers look for an early resumption of active municipal demand, but feel that toll-road securities will be closely scrutinized.

**Split decisions** on the general economic outlook are taking the place of the almost unanimous optimism prevalent a short time ago. Some of these opinions, however, are apparently influenced by politics. First-caliber banks, on the other hand, are inclined to take a cheerful view of the economy. One of the three largest sees most signs pointing to a

continued though moderate improvement in business. The vice president of a leading New York trust company thinks expansionary economic forces will persist for some time without major setbacks. Another of the "big three" banks, while optimistic, urges

moderation in viewing business possibilities for the rest of the year.

**Competing for ready money** are the newly popular "open end" mortgages, which now account for more than 25 per cent of the "residential" currently written. These may strengthen

home loans for light construction. Such cradle-to-grave obligations, though decried as inflationary, are attractive to the investing world because they provide lifetime borrowers at a comparatively liberal interest. In the opinion of the chief economist of



**B**TOURNAPULL is the first machine completely designed and built by the new LeTourneau-Westinghouse Company. Developed by our new engineering and research staff, it was built after careful study of today's scraper requirements. The new Model B prime-mover is a big, powerful tractor engineered for quick and easy replacement of component assemblies. All major assemblies—transmission, clutch, final drive, differential, etc.—can be lifted from the machine without necessity for time-consuming handling of other components. Every part of both prime-mover and scraper is engineered with a "plus" safety factor to give you the most rugged scraper unit ever built. Prototypes of the "B" were put through rugged tests on our new proving grounds. They were then tested on-the-job by leading contractors in all types of materials under rugged field conditions. The new LeTourneau-Westinghouse Company has carefully and thoroughly designed, tested and job-proved this new "B" Tournapull before putting it into production. Before you buy any scraper, be sure you check the BIG "B." It's available NOW.



**Biggest** single-engine self-propelled scraper on the market. "B" packs in 18 cu. yds., struck, or 23 cu. yds. heaped, without sideboards. New scraper design makes for easy loading. Proper weight distribution that puts 56% of loaded scraper weight on drive wheels, plus 293 hp of diesel power, help get heaped loads in a hurry. You have a choice of Cummins or GM engines for standardization with other equipment in your fleet.



A Subsidiary of  
Westinghouse

Air Brake Company  
CONTRACTORS AND ENGINEERS



The Prudential Insurance Co. of America, however, there should be a general shifting of funds from mortgages of all kinds into "other lending markets"—presumably public and corporate, with construction issues predominating.

One market may be broadened as a result of President Eisenhower's proposal that mutual fund companies be formed for the purpose of permitting individual investors to enjoy municipal-bond-income tax exemption. The President's suggestion to

Congress should be acted upon during 1955. At present, only financial institutions have the research facilities for selection of small-town obligations which yield the higher income demanded by individuals. The President's liberal school building-and-

leasing program under federal sponsorship opens up other construction vistas. Under this plan, the government would buy local school bonds and make direct "grants-in-aid" to the respective states.

**Depositors' bank balances** should be augmented by banks making further progress in developing "float reduction" methods for cutting check collection time. The latest improvements are announced by a leading Dallas bank and seven of Chicago's largest institutions. Heretofore, more than \$10 billion has been tied up throughout the country in "collection items". The 30 per cent average saving now possible will release about \$3 billion for commercial working capital, much of which should find its way into heavy construction.

**Deflationary fears**, prevalent for the past few months, have given way to warnings against inflation now that business activity is rising. *Axe-Houghton Weekly Business Index* is rising 10 points a month after having climbed from 210 to 240 since the middle of 1954. The present movement is in sharp contrast to last year's first quarter, when a 10-point dip persisted for several months.

At least five developments are serving to keep forebodings in check:

1. Production, still increasing, is 6 per cent above early February, 1954.
2. Bank clearings are well ahead of the same period for last year in 24 key cities, and particularly in the middle west.
3. New plants are resuming high activity and the government is estimating that construction will rise 7 per cent above its \$37-billion record in 1954.
4. Inventories are down to about "a normal replacement basis".
5. Defense spending is on an even keel, and ambitious federal highway and public-works programs are being planned.

To date, the first quarter of 1955 is doing quite well, and there is no indication that it will prove a boom-and-bust year.

THE END

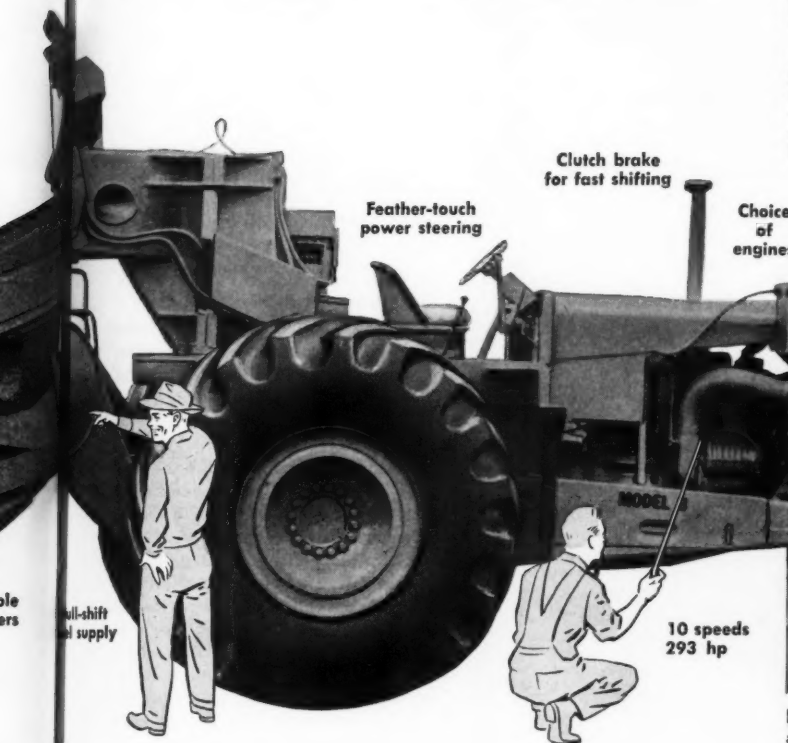
### Allis-Chalmers Purchases Assets of Baker Mfg. Co.

On the first of next month, Allis-Chalmers Mfg. Co., Milwaukee, Wis., will take over the operation of the Baker Mfg. Co., Springfield, Ill. Allis-Chalmers purchased Baker last month, exchanging common stock for all Baker's assets.

Baker's facilities in Springfield and Beardstown, Ill., have more than 180,000 square feet of floor space and more than 20 acres of land available for future expansion. The company, one of the oldest manufacturers of road-building equipment in the country, manufactures a line of bulldozers, road rippers, graders, rollers, snow-plows, and other attachments for crawler tractors. All of Baker's employees, except its principal officers, will continue in their present capacities under the new setup.

Every March the Red Cross asks help in answering the call of those in need. A generous response will help all of us.

## The new 23-yd. B Tournapull



Clutch brake for fast shifting

Feather-touch power steering

Choice of engines

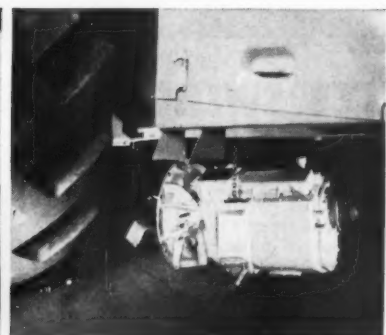
10 speeds  
293 hp



**Faster, easier loading** is a feature of brand new scraper design based on 36 years' scraper building experience. Blade is correctly angled for most efficient cutting action. Newly-designed push-block connects with scraper bottom as well as side sheets. This gives direct action to utilize full power of push-tractor for faster easier loading. Deflector plate at rear of bowl and curved apron provides easy boilling action. Scraper wheels track inside cutting edge. Apron lifts 6'6" to permit free ejection of any material. Cables are short. Welded box-beam construction increases strength, lowers deadweight.



**Large tires** (27.00 x 33, 30 ply) used all around provide ample load-carrying capacity without overloading. Tires and wheels are interchangeable between prime-mover and scraper. One spare serves your entire fleet.



... gear ratios allow you to select working speed best suited to underfoot conditions. Low gear matches pusher speed, enables "B" to help itself in loading... gives full lugging power for pulling through soft going. Clutch brake permits fast shifting without gear clashing. No double-clutching is necessary. This combination of 10 speeds, plus clutch brake for fast shifting, means hauling at higher speeds... more trips per hour.

**Instant-response**, positive electric controls are simpler and trouble-free. New feather-touch power-steer gives you feel of the road. Tailgate and apron are controlled by a single control switch. Tailgate moves forward automatically as soon as apron reaches full raised position. All electric motors, including steering motor, are in the open for easy adjustment when necessary. Electric controls enable operators to do better work all day long.

**Easy accessibility** of all components facilitate quick servicing and repair. Disassembly is easy. For instance, you can drop transmission in less than an hour without pulling engine. Bolt sizes are held to a minimum. Quick disconnects are used wherever possible. Drain and fill plugs are easily accessible. Number of lube points and types of lubricants are reduced to lowest practical limits. Large fuel tank with ten-hour supply is provided.

Tournapull—Trademark Reg. U. S. Pat. Off. BP-777-G

**Tourneau-Westinghouse Company, PEORIA, ILLINOIS**

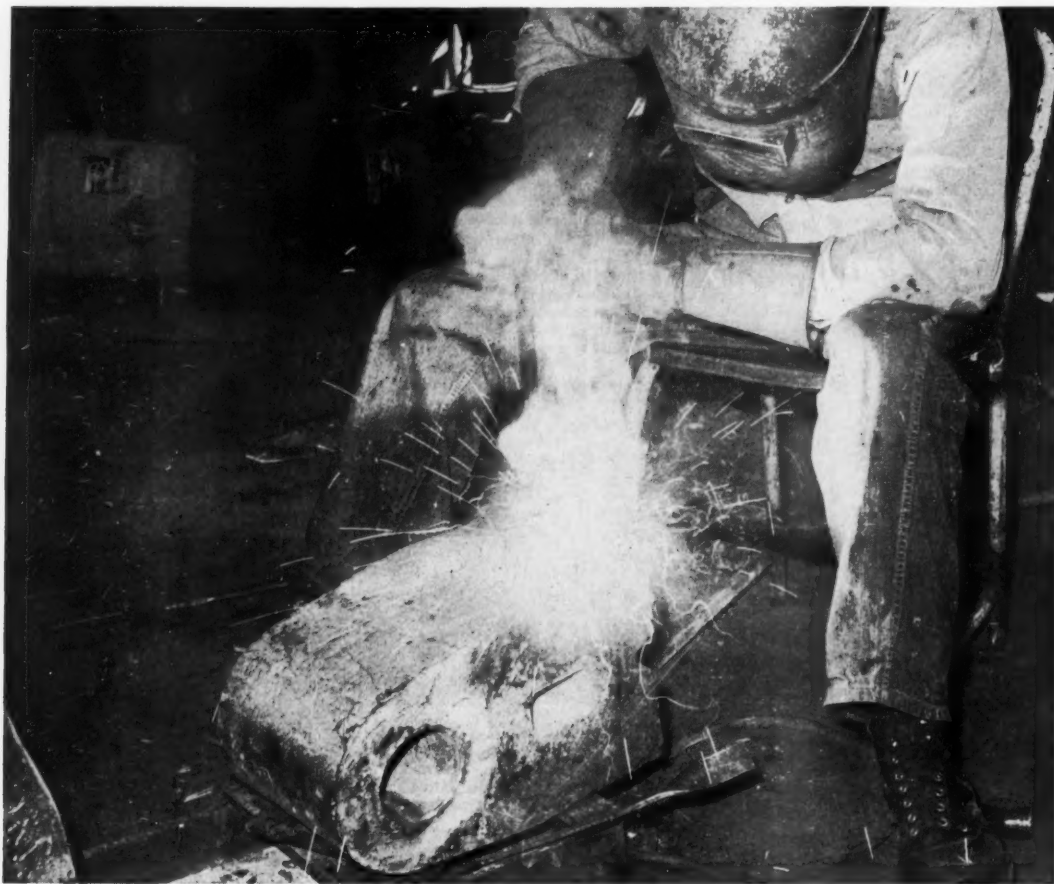


# Sewage plant operates while it is modernized

**New facilities are tied into existing structures; buildings are remodeled without interrupting service**

Excavation for a new screen room at the Wichita plant is carried on close to the old pump house by a Lorain crane with a Pettibone Mulliken ½-yard clamshell bucket. The remodeling job is being done without disrupting plant operations.

C&E Staff Photos



## KING SIZE SWING HAMMERS Last 10 Times As Long With Stooddy Hard-Facing

A large bauxite mill in the South crushes limestone used as a flux in the reduction of the ore. The hammer mill used here has 15 hammers to the set, each hammer weighing 300 pounds. Rotating at 750 RPM, the hammers are subjected naturally to extremely severe abrasion and impact—edges and corners are soon rounded off, resulting in greatly reduced efficiency and lowered production of properly sized aggregate. Ordinary manganese hammers operated for only one week; as hard-faced, they now last 10 weeks! Spare sets are available at all times for installation in the mill while the worn parts are being rebuilt.

Standard procedure now consists of bringing wearing areas back to size with Stooddy Nickel Manganese, topped off with a final pass of Stooddy 21. As a rule only about 12 to 15 pounds of manganese are required for rebuilding and two pounds of Stooddy 21 completes the hard-facing.

Detailed information on maintenance of all types of crushing equipment is contained in the Stooddy Guidebook, a copy of which you can obtain from your Stooddy dealer (see the yellow pages of your telephone book) or you may write directly to Stooddy Company. This famous manual is available without charge, of course.



The hammer in the foreground shows the metal loss in operation: leading edges have been completely worn away.



A hammer rebuilt and hard-faced, ready to be returned to the mill. Hammers can be reclaimed many times and service life prolonged indefinitely.

### STOODDY COMPANY

11936 East Slauson Avenue  
Whittier, California

One of the most difficult jobs involved in remodeling the municipal sewage-treatment plant at Wichita, Kans., is in keeping the existing plant in operation while modernization work is being done. In the first stage of construction, Martin K. Eby Construction Co., Inc., Wichita, Kans., built as many new facilities as possible around the old structures. When this had been done and a by-pass built, untreated sewage was by-passed into the Arkansas River for a period of less than 90 days while the old and new facilities were tied together. Then, while both old and new units were functioning, some of the old structures were remodeled.

This complete rehabilitation program, being done by Eby under a \$1,600,000 contract, was planned by Black & Veatch, Kansas City, Mo., a firm which is also supervising construction. The work was started early last year and is scheduled for completion by August, 1955.

The remodeling of three old fixed-cover digesters is probably the most complex job done to date on the project. After the concrete roofs of the old tanks had been removed and the tanks cleaned of debris and old sludge, the height of the walls was increased by adding a new 9-foot lift, and the tanks were fitted with floating covers. New heaters and gas-handling equipment were then installed.

#### Saw Cuts Reinforcing Bars

Starting at the center of the dome roofs of the old tanks, workmen using Ingersoll-Rand breakers powered by a LeRoi 105-cfm compressor broke up the concrete, dropping most of the broken pieces into the tank. When the ring reinforcing in the old roof was exposed, the radial rods tying this steel together were cut off around the edge.

Since there was as much as 15 feet of old sludge which was still producing combustible digester gas in the bottoms of these tanks, it was considered unsafe to cut the rods with a cutting torch. A Porta-Band Model 524 portable electric hacksaw was substituted, permitting a workman to saw through a 1-inch square rod in about 18 seconds. An army surplus generator provided power for the saw.

When the radial rods had been cut, a Manitowoc 3000B crane lifted the entire mass of reinforcing rods and clinging chunks of concrete in a single lift. After the roof had been removed, the Manitowoc bailed out the debris and sludge from the tanks with a Williams ¾-yard clamshell bucket.

Included in the project are a number of completely new units. Among these are two settling tanks 125 feet in diameter and 12 feet 9 inches high equipped with Process Engineers, Inc., clarifiers. The conical bottoms of the tanks slope 1 inch per foot toward a sludge well in the center. The 8-inch concrete floors are finished with 2 inches of grout. Near the top of the walls, a 3-foot-wide circular effluent channel inside the tank is supported on brackets which cantilever out from the tank walls.

#### Tank Forms

The 16-inch exterior walls of the settling tanks, as well as the walls of other tanks, were formed with vertical form panels spread and tied with Richmond Tyscrus, cones, and clamps. Interior form panels were 1 foot 11½

CONTRACTORS AND ENGINEERS



Forms for the 16-inch-thick walls of a settling tank are erected and tied with Richmond Tyscrus, cones, and clamps. Inside forms were set first, plumbed, and braced. After reinforcing was in place, outside panels were erected.



The deep excavation at the screen-room location, carried below ground-water level, is dewatered by a Stang wellpoint system. The installation kept the area dry while forms were erected and concrete placed for the new structure.

inches wide and the height of the wall. Exterior forms were 2 feet wide. The panels were faced with 3/4-inch plywood and backed with 2x4 frames. Notches at regular intervals in the sides received the form ties. These and many other forms were fabricated on the job in a well-equipped carpenter shop.

The interior forms for a section of tank wall were first set, plumbed, braced, and tied with reinforcing. Exterior form panels were then set and tied to the inside form with the Richmond form hardware. The form was plumb, tight, and rigid, and had practically no bracing on the outside.

Ready-mix concrete was supplied to the job by Walt Keeler Co. Inc., Wichita. One of the Northwest or Lorain cranes hoisted the concrete to the walls in two  $\frac{3}{4}$ -yard Gar-Bro bottom-dump buckets. On large pours such as the tank floors a 2-yard lay-down bucket handled by the Manitowoc crane placed as much as 400 to 450 cubic yards of concrete in 6 to 8 hours. During placing, the concrete was vibrated by Mall electric and mechanical vibrators. Seven days of water curing was accomplished by laying a soaker hose on the tops of the walls and covering both with burlap.

### Use Rubber Waterstop

Strips of 12-gage steel 8 inches wide were inserted in construction joints below finished grade for watertop. Above ground, Gates double-bulb rubber watertop was installed. This watertop, shaped like two cylinders connected with a web, was 6 inches wide. One of the cylinders or bulbs is encased in the concrete each side of the joint, and the web provides the seal. Approximately 500 linear feet of this type of material was installed. Expansion joints in tanks were sealed with Servisized sponge-rubber expansion joint  $\frac{1}{2}$ -inch thick.

Other new structures include an aeration tank 122 feet square and 16 feet deep, sludge lagoons with an over-all dimension of 300 x 450 feet, a sludge storage and grinding building, many interconnecting flumes and pipes, plus a number of smaller structures. An interesting feature of one of the small structures is the Amercoat plastic lining applied to the inside faces of the inlet structure which receives the raw sewage from the sewer system. This protective plastic material was applied to the forms by

(Concluded on next page)



## FIVE machines in a SINGLE package

The well-known versatility and usefulness of "PAY-LOADER" tractor-shovels are greatly increased by a complete line of attachments provided for them. Many of these attachments are designed specifically for and available *only* on the "PAYLOADER" line — enabling your "PAYLOADER" to handle a greater range of jobs than any other tractor-shovel.

So when you want a package of complete tractor-shovel usefulness—a single machine that can do more jobs on more projects—your best bet is a proven "PAYLOADER". There's a model and size to fit your needs.

## BACK HOT

Dig trenches, tank pits,  
bell-holes, foundations.

**CRANE HOOK**

Lift, load, carry and place steel, pipe, timbers, forms.



## LIFT FORK

Handle all kinds of unit loads on or off pavement.



### BACK-FILL BLADE

Back-fill trenches, walls, abutments — level and spread.



### OTHER USEFUL ATTACHMENTS

Scarifier teeth; special buckets; winch; pusher plate; cab; pick-up street sweeper; snow plows — rotary, "V", and blade.

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**PAYLOADER**  
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**THE FRANK G. HOUGH CO. • LIBERTYVILLE, ILL.**  
SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY







A Porta-Band portable electric hacksaw cuts reinforcing rods on the roof of a digester which is being remodeled. Old sludge in the tank, producing combustible digester gas, ruled out the use of a cutting torch for this job.

(Continued from preceding page)

the Amercoat Co., Los Angeles, Calif., before the concrete was placed. After the forms were removed, the structure was resealed to insure a perfect coverage.

When the rest of the plant is substantially completed, Eby will construct two new digesters, one 75 feet in diameter and the other 100 feet in diameter. Both are 30 feet deep and are fitted with floating covers. Two new digester control buildings will house external heat exchangers for heating sludge and other sludge-handling equipment.

#### Excavate Old Dump

Excavation for some of the structures was made difficult by an old city dump on the site of one of the settling tanks. An area 160 feet square and 14 feet deep had to be cleared of this debris before suitable foundation material for the tank could be secured. More than 1,000 feet of 48-inch Lock Joint pipe with Riblock joints for the outfall sewer was also built through this dump. A Caterpillar D8 tractor and dozer removed about 10 feet of the material and the balance of the trench was dug by the Manitowoc 3000 crane using a 3-yard Hendrix dragline bucket.

Since some of the structures were well below the ground-water level, wellpoint systems were used to de-water these areas. One of these units was a new screen room, adjacent to the existing pumphouse, which extends below water level to receive the incoming sewage by gravity flow from the inlet manhole. The site was first excavated down to about ground-water level. A Stang wellpoint system installed at this level lowered the ground water in the area so that all subsequent excavation continued in the dry. A Lorain crane using a ½-yard Pettibone Mulliken clamshell bucket excavated the sandy material and loaded it into trucks to be hauled to other parts of the site. The wellpoints kept the area dry while forms were constructed and concrete placed for the screen room walls.

Grading of the plant site includes filling to within a foot of the top of the large tanks. A berm 2 feet wide surrounds the tanks with a slope of 2 to 1 outside the berm. Much of the material required for these fills is secured from the nearby Arkansas River by a hydraulic dredge. One of the final phases of the work will be the

construction of nearly 2,000 linear feet of 8-inch concrete paving on plant roads. These pavements are 27 and 30 feet in width and will have wire-mesh reinforcing.

#### Personnel

Supervising the work for Martin K. Eby Construction Co., Inc., is Tom Langford. General carpenter foreman is William W. Burnam, and general labor foreman is Earl Mashak. R. F. McKinney is field engineer for Black & Veatch.

THE END

Insure your own personal security and that of the nation by regular investment in U. S. Defense Bonds.

#### Portable Electric Plants

■ An extensive line of portable electric plants has been introduced to the construction industry by Multi-Matic Corp., 14741 Bessemer St., Van Nuys, Calif. The Gen-A-Matic line includes 22 models ranging from 275 and 500 watts in 6 and 12-volt units to 4,000-watt 120-volt models. Both ac and dc models are offered with operating speeds ranging from 2,800 to 3,600 rpm. Four-cycle engines power the units.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 503.



The Model 17D Gen-A-Matic electric plant.

# CATERPILLAR ANNOUNCES THE NEW D7 SERIES C MORE POWER, SMOOTHER PERFORMANCE



■ Following new advances in wire manufacture and rope fabrication, John A. Roebling's Sons Corp. has announced a new line of steel-core wire rope having 15 per cent greater strength than the strongest grade marketed heretofore.

In producing the new high-tensile-strength wire rope, Roebling has overcome obstacles that in the past caused a proportionate decrease in other qualities as the strength of the rope increased. As a result, the new wire rope offers increased resistance to wear from bending and abrasion in addition to its higher-strength qualities. Tested in the laboratory and on actual job applications, the wire rope

## Wire Rope With Greater Tensile Strength Will Give Longer Service in Heavier Uses

is reported to have a substantially longer service life than normally expected with heavy-duty use.

The new rope will be manufactured primarily in preformed constructions, and is being marketed in sizes ranging from  $\frac{1}{4}$  to  $3\frac{1}{2}$  inches.

The manufacturer foresees wide use of the higher-strength wire rope in applications using a rope with an independent core, which include most construction uses. The new rope is

expected to increase the output of shovels, cranes, scrapers, wagons, dredges, and most earthmoving machinery by its markedly longer service life and greater capacity. It will also be of benefit in vertical drilling operations, permitting drilling to greater depths.

Handling heavier loads over longer periods, the new rope will not only increase the productive capacity of machinery now in operation, but is

expected also to affect the design of new equipment.

For further information write to John A. Roebling's Sons Corp., 640 S. Broad St., Trenton 2, N. J., or use the Request Card at page 18. Circle No. 546.

## Improved Pump Mechanism For Pipe-Joint Grouting

■ A redesigned grout pump mechanism utilizing a lever action requires considerably less effort to operate than previous models. The mechanism, replacing a piston-action pump, can be attached to any of the present grout pumps used for the inflation of pressure joints on vitrified clay pipe. It will be standard equip-



A new lever-action pump mechanism for grout pumps used on pressure joints of vitrified clay pipe is reported to be easier to operate than piston-action types now in use.

ment on all such pumps in the future, according to the Clay Sewer Pipe Association.

The pump consists of a reservoir for the grout mixture, a hand-operated pump, pressure gage and hose with a nozzle. In pressure-joint clay-pipe installations, grout is pumped to the pressure joint, a hollow rubber gasket. The easy-to-operate hand pump supplies all the necessary pressure to properly inflate the joint. Pressure from the pumps is measured by a dial indicator on the hose nozzle.

For further information write to the Clay Sewer Pipe Association, 311 High-Long Bldg., 5 E. Long St., Columbus 15, Ohio, or use the Request Card at page 18. Circle No. 529.

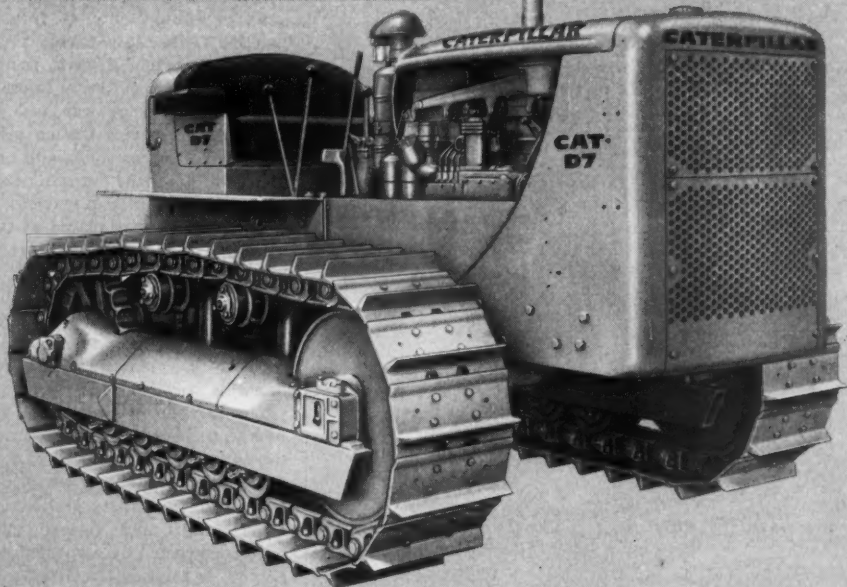
## Gardner-Denver Merges With Keller Tool Co.

Stockholders of both the Gardner-Denver Co., Quincy, Ill., and Keller Tool Co., Grand Haven, Mich., have approved consolidation of the two companies. Keller will now operate as the Keller Tool Division of Gardner-Denver Co.

Sales activities of the two manufacturers of air compressors and air tools and equipment will be coordinated to provide expert compressed-air service and a complete line of products to each of the industrial fields serviced by the companies.

E. V. Erickson, president of Keller, has been elected an executive vice president of Gardner-Denver, while Gifford V. Leese remains as president of Gardner-Denver.

**NOW 102 DRAWBAR HP!  
NOW A VIBRATION BALANCER  
ON THE ENGINE!**



Here's the new CAT\* Diesel D7 Tractor... latest example of Caterpillar Leadership in Action!

**DRAWBAR HP INCREASED** to 102, engine HP to 128 (at 1200 r.p.m.).

**VIBRATION BALANCER** on the powerful 4-cylinder engine now gives you all the smoothness of 6-cylinder performance.

**DRAWBAR PULL** now 28,700 pounds maximum.

**NEW STARTING ENGINE** has more power for surer, faster starts in all weather, and simple single-lever control for easier operation.

**NEW "WATER QUENCH" PROCESS** for hardening track shoes almost doubles shoe life.

The new D7 Series C is ready now to give you more profitable production than ever before. Call your Caterpillar Dealer today for a demonstration!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

**CATERPILLAR TRACTOR CO., Peoria, Illinois**

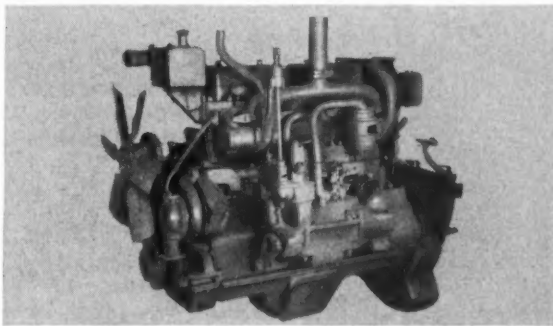
I would like additional information on the new D7 Series C

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City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

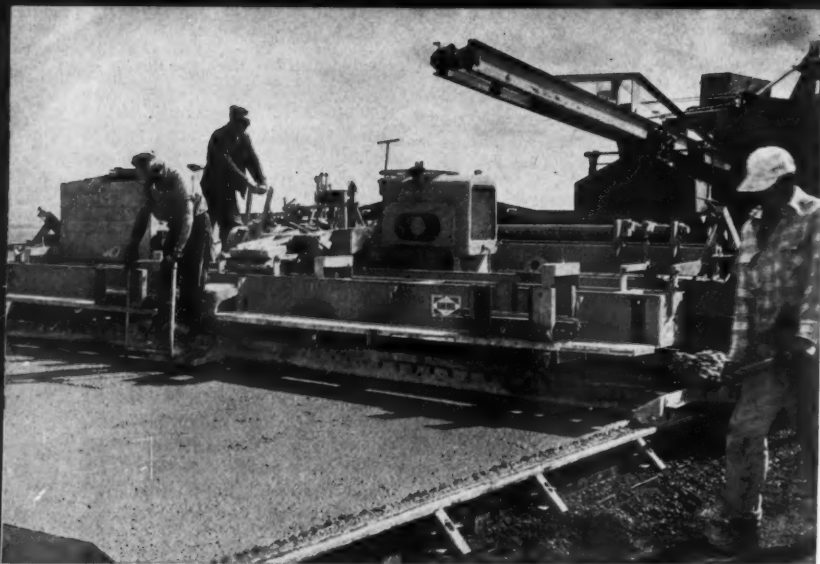


New 128-HP Engine features improved fuel injection system, flanged center main bearing to take crankshaft thrust, many other advances.

**CATERPILLAR\***

\*Both Cat and Caterpillar are registered trademarks—(R)

**THE NEW D7...MORE  
POWER, SMOOTHER  
PERFORMANCE**



A workman riding on the rear of the Blaw-Knox spreader sets 1/2-inch-diameter tie bars in the fresh concrete with a hand tool. Just ahead is the MultiFoote 34-E DuoMix paver, working between the forms. C&E Staff Photos

## New equipment paces paving

Venturing into the concrete-paving field for the first time, a North Dakota contractor started a job last summer with a completely new equipment spread. Everything—from batch plant to joint filler—was brand new. Most of the workmen on the job had not worked on concrete paving before, and one of the problems at the start of the project was the training of equipment operators and other members of the paving crew. This shortage of trained workers is partly explained by the fact that there is probably only one other contractor in the state equipped for this type of work.

This project included about 11 miles of State Route 44 from the junction with State Route 29 just north of Drayton, N. Dak., south to the junction with State Route 17. The contract price was just over \$886,000. The paving section was 24 feet wide, 8 inches thick, and had a 1 1/2-inch parabolic crown. Center joint tie bars 1/2 inch in diameter and 30 inches long were placed at intervals of 30 inches along the center line. The only other reinforcement was at bridge approaches. This highway had been graded and surfaced with gravel 3 years before, and the concrete pavement was laid directly over this gravel surface.

Through the residential and business sections of the town of Drayton, the pavement was widened to 44 and 62 feet, face-to-face of curbs. Separate curb and gutter sections with 6-inch curbs and 18-inch gutters were constructed by a subcontractor. Schultz & Lindsay Construction Co., Fargo, N. Dak., the general contractor, started paving August 2 and completed the project November 15.

### Road Equipment

Leading the train of new equipment was a Schramm Pneumatractor supplying air for a Joy hammer used to drive form pins for the 7,000 feet of Blaw-Knox steel forms. A Blaw-Knox subgrader was not available when the job started, but one arrived shortly after work was begun and took its place on the forms cutting the gravel surface to true subgrade. The key unit of the paving train was a MultiFoote 34-E DuoMix paver which operated from the road-bed between the forms. Two water trucks, with a capacity of 1,500 gallons, hauled water from the nearby Red River to the paver.

Finishing equipment included a Blaw-Knox spreader, a Blaw-Knox finisher, and a Koehring longitudinal float. The spreader was equipped with a mechanical vibrator powered by the spreader engine. This eliminated the separate engine usually required to operate vibrators. After the machine finishing operations, the slab

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BOX 2494

YOUNGSTOWN 9, OHIO



## paving despite inexperienced crew

**Contractor outfits himself with complete new spread, trains workers before tackling his first concrete-paving project**

was floated and straightedged by hand and then given a final finish with a hose drag and a burlap drag belt on a rolling bridge.

As soon as possible after the finishing, the slab was covered with Sisal-kraft curing paper. The crew moving the paper ahead used a four-wheel trailer pulled by a John Deere tractor. Moving the heavy forms ahead was simplified by the use of a Ford F-600 flat-bed truck equipped with a Pitman Hydra-Lift. The Hydra-Lift controls were mounted in the truck cab so that the driver could operate the lift and the truck alternately without getting out of the cab.

### Batch Plant

About a half mile off the right-of-way near the middle of the job, the contractor set up a Blaw-Knox batch plant on a rail siding. Aggregates were shipped to the plant from Crookston, Minn., by rail in bottom-dump hopper cars. Cars were unloaded to track hoppers which fed the aggregates to Atlas undertrack conveyors. These electric-powered conveyors were 40 feet long and had 24-inch belts. Power for the electric motors was generated by a Caterpillar D4600 diesel generator set. There were two of these unloading conveyors, one for sand and one for coarse aggregates.

A Caterpillar D6 dozed the materials from the ends of the conveyors to stockpiles on either side of a Blaw-Knox three-compartment 100-ton bin, from which the aggregates were weighed into batch trucks in a twin-batch weigh hopper. A Lima truck crane using a 1½-yard Owen clamshell bucket charged both sand and gravel aggregates into the bin from the stockpiles.

Cement from the Universal mill at Duluth, Minn., arrived at the plant in bulk cars and was transferred to the storage bins through an under-track screw and cement elevator. The two cement silos of the Blaw-Knox plant had a combined capacity of 800 barrels. Air for vibrators in the cement bins was supplied by a Schramm 105-cfm compressor. Batch trucks picked up aggregates first and then drove to the cement plant, where the cement was weighed out to the two batches simultaneously by the twin weigh batcher on the plant. Trucks then stopped at a platform where a workman carefully covered the cement with sand to prevent loss during transportation.

Each 38-cubic-foot batch contained approximately 2,900 pounds of coarse aggregate graded from 1½-inch down, 1,700 pounds of sand, and 728 pounds of air-entrained cement. Air content of the mix ranged from four

(Concluded on next page)

Longitudinal and transverse joints having been sawed and cleaned, Pressite 77 cold-applied rubber-asphalt joint compound is used as filler. The compound is pumped from containers by a Graco pump, mounted on the trailer in background.

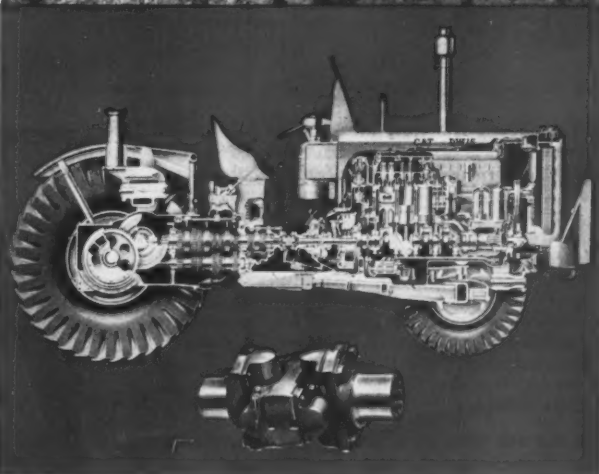


This new 150-horsepower four-wheel tractor is announced by Caterpillar Tractor Co., Peoria, Illinois, in conjunction with the fiftieth anniversary of the crawler tractor, pioneered by Caterpillar. Powered by a Cat six-cylinder Diesel Engine. Standard transmission provides 10 forward speeds and 2 reverse. Designed for principal use with the Cat No. 15 Scraper, No. 10 Scraper and No. 10 Wagon. Includes wagon controls and windrow breakers.

An example of how sales begin on the drawing board is shown by this cut-away view of the Caterpillar DW 15 Tractor. Note that every component in the design is well suited to, and contributes competitive advantages to, the complete product. Among the sales-stimulating features of this tractor is the right type and size MECHANICS universal joints. Here at MECHANICS we work closely with our customers during all phases of their power transmission developments. It will pay you to call in a MECHANICS engineer while your product's power train still is in the drawing board stage—to secure size, weight, service and safety advantages.

**MECHANICS UNIVERSAL JOINT DIVISION**  
Borg-Warner

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Aggregates for the concrete on this 11-mile paving job are batched from this Blaw-Knox three-compartment 100-ton bin equipped with twin weigh batcher. The Lima crane charging the bin uses 1½-yard Owen clamshell bucket.

(Continued from preceding page)

to 4½ per cent, and the concrete had a slump of 1½ to 2 inches.

#### All Joints Sawed

Within 12 to 24 hours after the concrete was placed, transverse joints were sawed at 80-foot intervals. Intermediate transverse joints were later sawed every 20 feet. These joints were cut 1½ inches deep, while the center-line joint was sawed to a depth of 2 inches. A Clipper Con-Saw-Matic and three Eveready concrete saws, all using diamond blades, were used.

As soon as the last joints were sawed, they were cleaned with an air jet from a Jaeger 75 cfm compressor and filled with Prestite 77 cold-applied rubber-asphalt joint compound. The joint filler was pumped from

barrels to the applicator nozzle by a Graco pump mounted on a four-wheel trailer. This trailer and the air compressor were towed by a John Deere tractor. Two 1,500-gallon water trucks accompanied the saws.

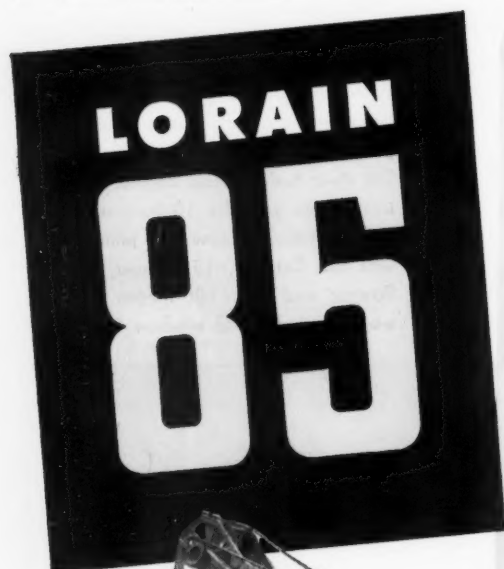
Shoulders were constructed of stabilized gravel obtained from a pit 36 miles west of the project.

In spite of the inexperience of the crew, the job was running smoothly within a very few days. Once out of the town of Drayton and on the straightaways, the crew placed approximately 2,000 linear feet of slab per day and produced a completely satisfactory pavement in all respects.

#### Personnel

Much of the credit for training the crew and getting the job operating smoothly goes to William Sullivan, who was superintendent for Schultz & Lindsay Construction Co. He was one of the few men on the job with previous concrete-paving experience. Project engineer for the North Dakota State Highway Department was Philip Brua. Division engineer of the Grand Forks Division, which supervised this project, is J. P. Kennedy. F. H. Brasie is construction engineer for the highway department, and S. W. Thompson is highway commissioner.

THE END



## WHAT'S *NEW* IN THE LORAIN-85

★ **FULL AIR CONTROLS** ★ metered air operation of shovel crowd and retract clutches ★ power boom lowering and derricking ★ crawler travel in both directions ★ dipper trip ★ crowd brake ★ crawler steering ★ tread lock ★ air operation of travel and crowd jaw clutches available.

★ **GREATER OPERATING RANGES** ★ 26 ft. shovel boom to dig and load higher ★ 27 ft. hoe boom to dig deeper.

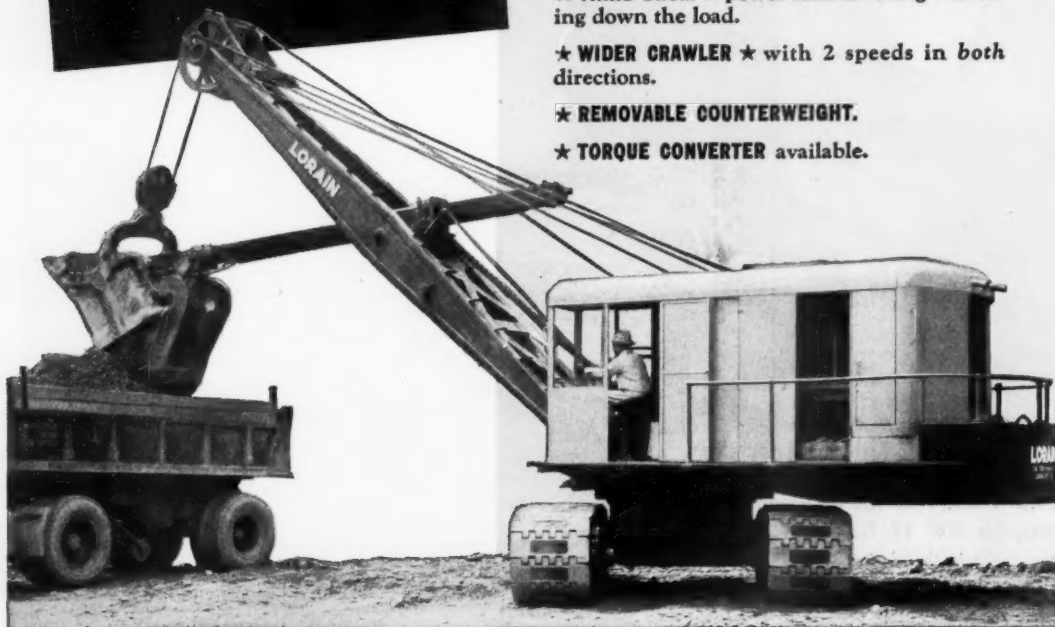
★ **GREATER CAPACITY** ★ 45 tons lifting capacity.

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★ **WIDER CRAWLER** ★ with 2 speeds in both directions.

★ **REMOVABLE COUNTERWEIGHT.**

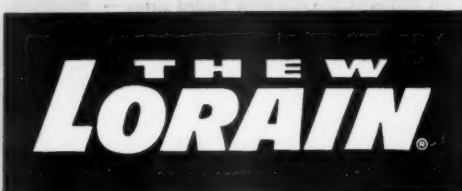
★ **TORQUE CONVERTER** available.



Just look at all the new advantages you get in the new Lorain-85. And remember, they are in addition to all the time-tested features of Lorain's big-machine design and construction. For example, you still get Lorain's center-drive design that allows full engine power to be concentrated on any one operation or divided between as many as three simultaneous operations — Lorain's smooth, shock-absorbing Hydraulic Coupling power take-off for "never-say-die" application of power. This new Lorain-85 is designed and built to out-perform and out-last everything else in the 2-yard class. Get all the facts today!

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**THERE IS MORE TO THE STORY ABOUT THE NEW LORAIN-85. YOUR NEARBY THEW-LORAIN DISTRIBUTOR WILL POINT OUT EVERY NEW FEATURE.**



### Daniel Construction Co. Names New Officers

Succeeding Charles E. Daniel as president of Daniel Construction Co., Greenville, S. C., is his brother, R. Hugh Daniel, who now holds office as both president and treasurer of the company. Charles E. Daniel, founder of the general contracting firm, is serving as chairman of the board.

The company has also appointed several men to head various branches of the firm. Carl G. Englund is vice president and general manager of the Greenville office; J. A. Dantici is vice president and manager of Daniel Construction Co. of Alabama, with offices at Birmingham; H. L. Longcrier is vice president and manager of the new Daniel Construction Co. of Virginia, with offices at Richmond; and Harry J. Stellmann is manager of a second new branch, Daniel Construction Co. of Florida, with offices at Jacksonville.

### Reprint Gives Data on Welded-Steel Machinery

■ A reprint of three articles presenting principles that the practical designer can follow in designing welded-steel machine parts and machinery is available from the Lincoln Electric Co., Cleveland 17, Ohio. The articles were adapted in part from Lincoln Electric's WeldDesign course.

The practical information given shows factors that determine costs, how a weld may be calculated to meet stipulated load requirements, how to eliminate guesswork from design computations, how to use steel to best advantage in comparison with cast iron, and how to control distortion. A typical problem is worked out.

To obtain this reprint write to the company, or use the Request Card that is bound in at page 18. Circle No. 483.

CONTRACTORS AND ENGINEERS



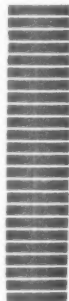
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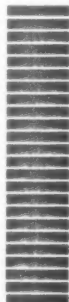
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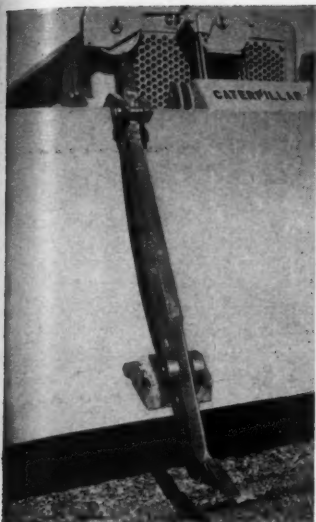
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Mounted with a rocker plate at the bottom and a flexible clamp at the top, the new H&L Rapid Ripper flexes to accommodate stress movements of the dozer blade and the ripper itself.

### New Lightweight Ripper Flexes With Dozer Blade

Designed to accommodate the normal flexing of dozer blades under use, the new H&L Rapid Ripper introduces a new method for mounting dozer rooters. A rocker plate on the lower attachment bracket keeps the ripper shank in constant contact with the dozer blade while a flexible top clamp permits the normal stress-induced movements of both ripper and dozer blade.

Since the combined shank and tooth of the ripper for the largest size offered weighs only 130 pounds, it is easily attached or removed by one man. The lower bracket is permanently installed on the dozer blade, and the shank, tooth, and top clamp can be carried on the machine and attached when needed.

The attachment is adjustable for 8, 12, and 16-inch ripping depths. Models are available through a nation-wide distributor organization in sizes to fit all makes and sizes of tractors.

For further information write to H&L Tooth Co., 1544 S. Greenwood Ave., Montebello, Calif., or use the Request Card at page 18. Circle No. 522.

### Stone & Webster Names Chicago District Manager

Franklin C. MacKrell, a vice president of Stone & Webster Engineering Corp., Boston, Mass., has been made district manager in charge of the firm's Chicago office. He takes the place of Louis H. G. Bouscaren, who has retired after more than 50 years' service with the company.

Mr. MacKrell will be responsible for developing new opportunities for the company in the midwest area.

A district manager in the corporation's Washington office from 1940 to 1947, he worked closely with U. S. Government agencies on matters pertaining to Stone & Webster's wartime projects. In 1947, he was transferred to the company's office in Boston, and in 1949, was made a vice president of the corporation.

Remember—March is Red Cross Month

MARCH, 1955

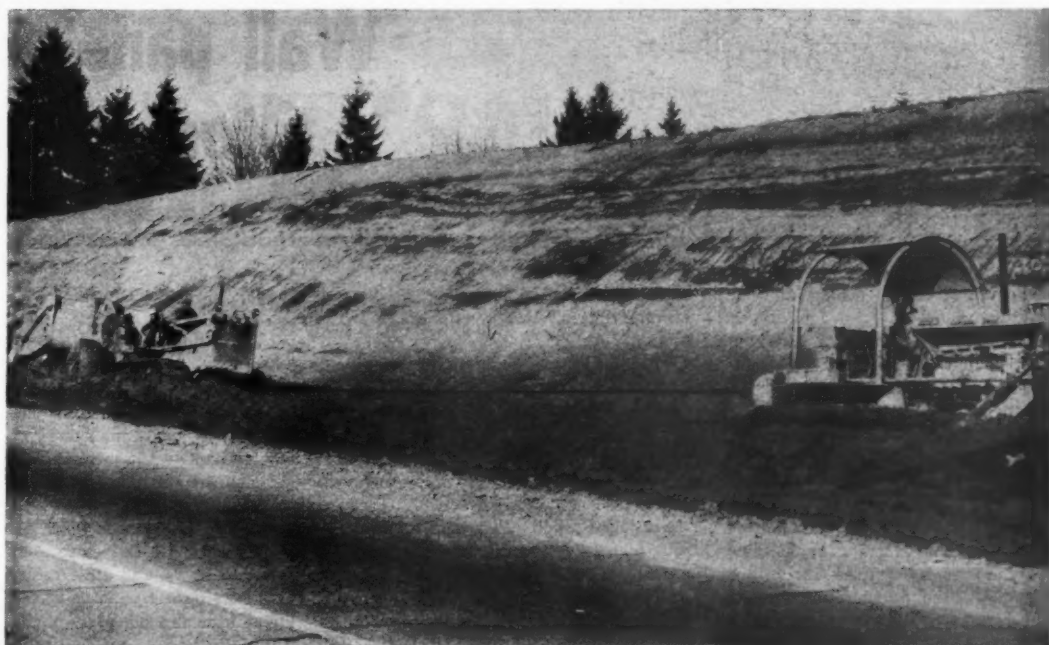
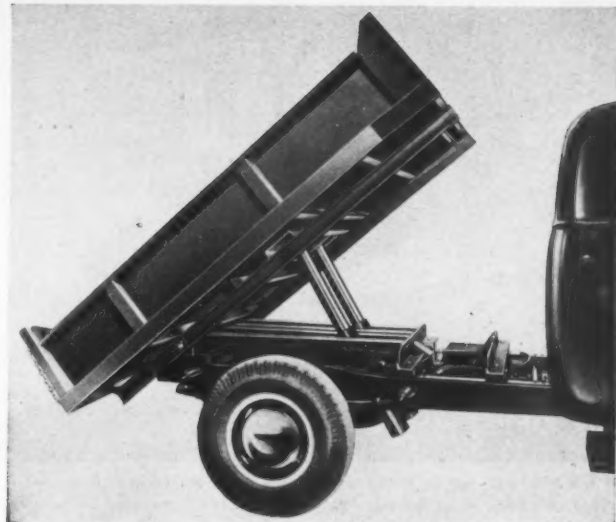
Light-duty Galion Allsteel hoist.

### New Hydraulic Hoist For Light Dump Trucks

A new hydraulic hoist for  $\frac{1}{2}$ ,  $\frac{3}{4}$ , and 1-ton trucks has been announced by the Galion Allsteel Body Co., Galion, Ohio. The Model 334N hoist can be mounted under any pickup body as well as any platform body up to 9 feet in length or under a light-duty Galion Allsteel dump body up to 8 feet long. Rated capacity of the hoist is up to 4 tons, depending on the body length and pivot angle.

Suitable for installation on trucks having cab-to-axle dimensions of 46 to 60 inches, the 334N hoist provides a dumping angle of 40 degrees.

For further information write to the company, or use the Request Card at page 18. Circle No. 407.



## TRACTOR WINCH KEEPS SCRAPERS MOVING ON RAIN-SOAKED ROAD JOB

Bad weather threatened to bog down scraper operations on a particularly wet section of US 99 highway construction near Vancouver, Wash.

A Hyster winch mounted on a Caterpillar D8 Tractor soon had the job back on schedule.

**Tractor Winches are your best job insurance** because they are designed specifically to provide the tremendous pulling power needed to keep equipment on-the-move—even in the worst conditions. Hyster Winches, for example, increase pulling power up to 100% over tractor drawbar pull.

**Tractor Winches give long-reach pulling power** that can be extended the full length of the winchline—up to 400 feet. Loads in positions inaccessible to the tractor can be pulled by taking the winchline to the load while the tractor remains stationary. The load can then be winched to the desired position.

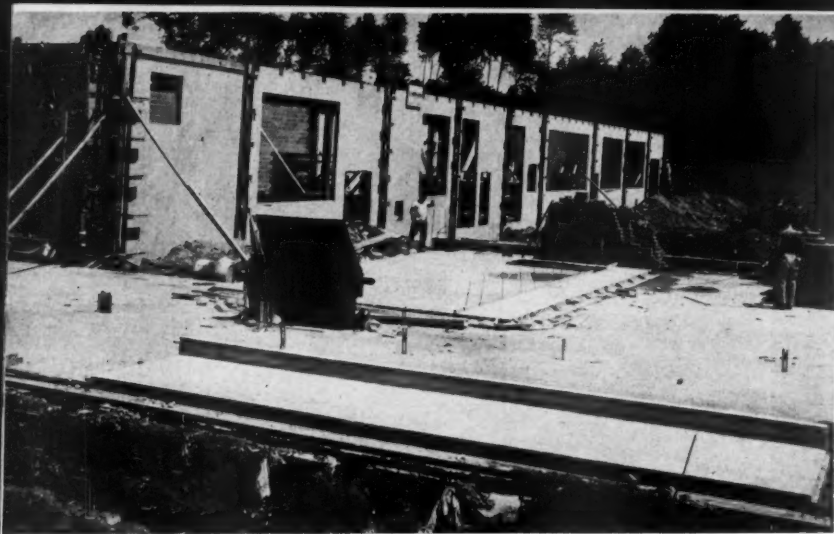
**Tractor Winches save tractor wear and tear.** Pulling an extremely heavy load with the tractor drawbar causes wear on the final drive and track assemblies. Sustained full-power operation may result in premature repairs and resulting high operating costs. Winches exert pulling power while the tractor remains stationary and cause no wear on tractor drive and track assemblies.

**Your Caterpillar-Hyster Dealer** will be glad to help you select the right winch for your job. See him today or write Hyster Company... 2952 N. E. Clackamas Street, Portland, Oregon, or 1052 Myers Street, Danville, Illinois.

## HYSTER COMPANY

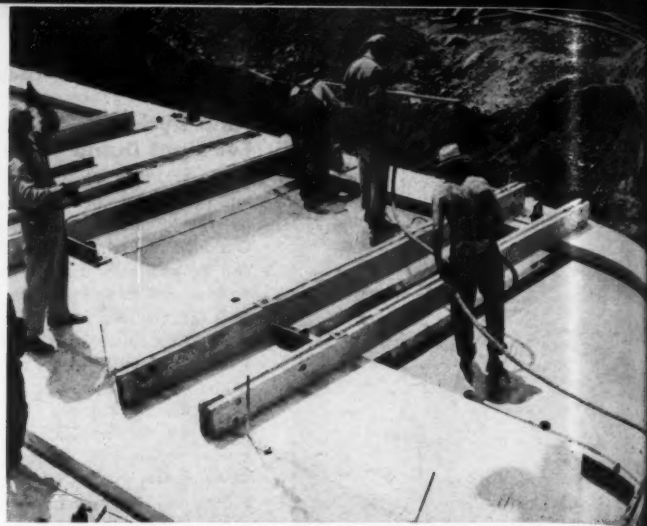
"Matched Design" Tractor Tools for Caterpillar-built Tractors





Some of the 200 wall panels being used in the construction of the new Bethany-Orange-Woodbridge Regional High School, Woodbridge, Conn., are held in position by Superior braces until they can be fixed permanently in place.

C&E Staff Photo



A panel with large window openings is braced with spruce strongbacks before being tilted into position. This support prevents the slab from cracking during the erecting operation.

## Wall panels, arch beams tilted up on school job

**Limited area for casting and erecting big concrete slabs calls for ingenuity; use of this method pares project costs**

The use of tilt-up construction in building projects of various types testifies to the growing popularity of this modern method of erection. Originally confined pretty much to industrial application, as in large one-story warehouses, it has recently been employed in constructing barracks, schools, and other buildings.

A project involving casting and erecting of 200 concrete wall panels, some weighing as much as 32 tons, was the Bethany-Orange-Woodbridge Regional High School, Woodbridge, Conn., which was completed little more than a month ago. The contractor estimates that use of the tilt-up method on the job has cut

costs by between 20 and 25 per cent. And the time saved represents an important part of this economy.

The Gellatly Construction Co., Bridgeport, Conn., was the general contractor. Actual tilting up of the panels was subcontracted to Leake & Nelson Co., rigging contractor also of Bridgeport.

The \$1,700,000 project includes, besides construction of a 98,000-foot-square school building, such items as grading and preparation of an athletic field, roads, and a parking area, and construction of water supply and sewage-disposal facilities.

Some unusual equipment was used on the job, which proceeded at a good

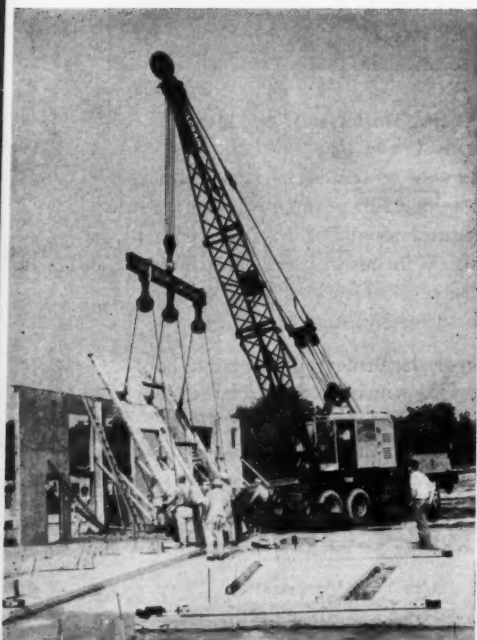
clip despite the difficulties created by limited casting and erecting space. These space limitations called for some tricky maneuvering of Leake & Nelson's erecting rig—a big Lorain truck crane equipped with rolling outriggers. On a good day, however, crews were able to tilt up and position two of the big (32-ton) panels and 13 of the smaller (7½-ton) ones.

The panels, all 6 inches thick, are of varying sizes and shapes to allow for windows, doors, and other design features. The largest panel is 26 feet 3½ inches wide and 29 feet 5½ inches high; the smallest is 2½ feet wide and 12 feet 10 inches high. In addition, there are six 23-ton half-arch

bents, each one 25 feet high, which form the beam structure of the gymnasium.

### Floor Slab

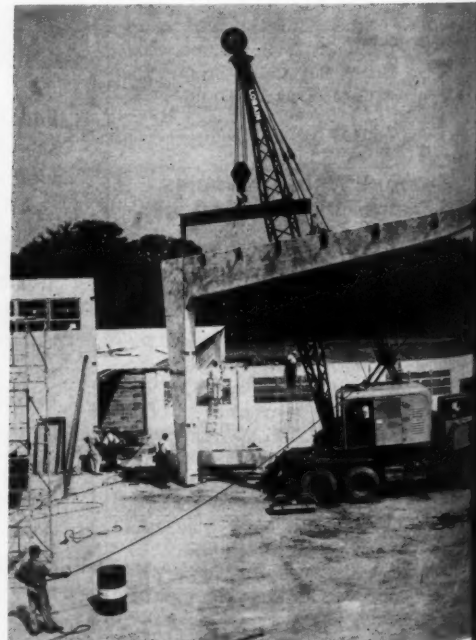
After grading and other preparatory phases were completed, Gellatly placed the reinforced-concrete footings and floor slab. Ready-mix concrete containing gray cement was hauled to the site in truck mixers and placed at the rate of between 300 and 400 cubic yards per week. Wire mesh was used as reinforcing in the 5-inch-thick floor slab. The concrete was vibrated as the slab was built up. A contractor-made tamping device aided in finishing unreinforced por-



A Lorain MC-524 Moto-Crane with special rolling outriggers uses six pickup points to lift a panel into position. Sheaves on the box beam provide correct lifting balance.



With the panel in position, reinforcing bars in the floor slab and panel are fastened temporarily with Crosby clips. When these are removed later, the rods will be welded together and the trench backfilled and concreted.



A 23-ton half-arch bent, which will form part of the gymnasium's beam structure, is lifted into place by the Moto-Crane as a workman at left guides the hinged end.



tions where a vibrator was ineffective. Foundation walls were set on pedestals instead of deep footings. Fills up to 11 feet deep were built up under the wall panels.

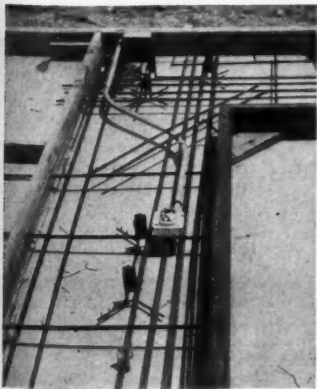
Atlas white cement, added at the site to insure a clean white mixture, was used in the concrete for the wall panels. In this case, aggregate batched at the ready-mix plant was brought in by truck mixers, and the white cement was dumped into the trucks from an overhead hopper fed by a Brik-Toter conveyor. Plastiment was added to the mixture to retard the set, and since water-cement ratio was also lowered, a crack-free outside surface was assured. Sika Chemical Corp. furnished its Plastiment in liquid form to prevent any discoloring of the concrete.

Since the floor slab was used as a casting bed, Hunt's T225 resin-base parting compound was put down before any of the panels were cast. Wooden forms were used for the pours, and steel rods provided reinforcing in the panels. Because space was limited, panels were often cast one on top of another.

Electric conduits, switch boxes, and outlets were set in position in the form before concrete was placed. Superior concrete lifting inserts, which were held away from the bottom of the panel by galvanized U's, were also positioned before the pour. After the panel had set, dummy coil bolts were removed from the lifting devices and bolts for the pickup plates inserted and tightened with an air-powered Ingersoll-Rand impact wrench.

From 2 to 8 pickup points were used, depending on the size and shape of the panel. These were located so as to provide proper balance when the panel was lifted up and swung into position. Special-design concrete lifting plates were fastened to the panel at these points with coil bolts. Spruce strongbacks were used to prevent cracking of the panels which had large window or door openings, where the concrete tensile stresses were excessive.

Before the panels were lifted, Superior braces were attached. Once the panel was positioned, these were fastened at the other end to the floor slab, thus bracing the wall panel until it was permanently fixed in place. A threaded tube at the foot of each brace permitted an adjustment of 4 inches to allow the wall to stand plumb.



A wall panel form, ready for a pour, has electric conduit and switch box set in position. Superior lifting inserts, center and top, are held away from the bottom of the slab by galvanized U's.

Gellatly had 17 panels weighing 20 tons or more each up on Superior braces when Hurricane Carol hit, but the braces held secure.

#### Tilting-Up Rig

For erecting the panels, Leake & Nelson used a Lorain MC-524 Moto-Crane equipped with 40-foot boom and special rolling outriggers designed by George Yule of the sub-contracting firm. Each outrigger consisted of four army-tank idlers—steel

(Concluded on next page)

Rolling outriggers substitute for permanent outriggers on the Lorain MC-524. The four steel wheels, capped with Goodyear solid tires, are fastened to a frame of welded steel channels and hang about 1/2 inch off the ground.



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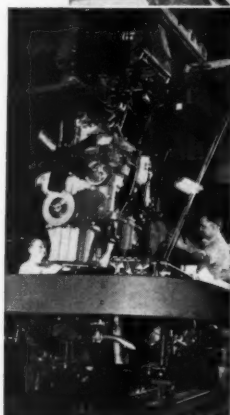
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Your Autocar starts down the assembly line with a tag specifying exactly the components recommended for your hauling conditions.



A Campbell Lad-E-Vator, powered by a Wisconsin engine, lifts stone chips to the roof of the school building, where a built-up roof is being laid over 2-inch planks.

wheels capped with Goodyear solid tires and fastened to a frame of welded steel channels. The entire rigger frame was fastened through a ball-and-socket arrangement to the threaded rod, and hung so that the wheel caps were about 1/2 inch off the ground. The pathway of the outriggers was kept cleared to provide the best possible bearing service.

The subcontractor substituted the rolling outriggers for the regular steel pyramids in order to get away from the necessity of disconnecting and connecting the devices each time the rig was moved. And since the crane often had to move to pick up each successive panel and then move some distance to the positioning point, the old method would have been impractical.

The lifting rig had a box beam suspended from the boom. A center sheave was stationary, and the two outside sheaves were movable in 4-inch increments to permit picking up the panels with proper distribution of weight. Where more than 4 pickup points were used, secondary box beams were suspended from the main beam. This arrangement provided a total of four sheaves, permitting the use of as many as 8 pickup points.

After the panel had been tilted up, positioned, and braced, reinforcing rods protruding from both the floor

slab and the panel were fastened temporarily with Crosby clips. Later the bars were welded together and the clips removed. The trench was then filled in with earth and a slab of concrete placed on top.

The biggest erection job on the project involved three concrete arches, each cast in two sections, which provided the wall and roof beam structure of the gymnasium. Each half-arch is 48 feet long, 2 feet wide at the base plate, and 1 foot 6 inches wide at the hinge end. Standing height of each bent is 25 feet 3 inches. Approximately 3 1/2 tons of reinforcing, consisting of 1 1/4-inch-square rods, went into each of the six

half-arches.

Two plywood forms were used in casting the bents, with three identical half-arches being cast one on top of another.

After the concrete had cured and forms were stripped, two half-arches were lifted by two cranes and set in place. The hinge ends were pinned while the cranes supported the bents. Steel plates had been cast in the rigid arches, and clips welded to them provided seats for roof purlins as the roof deck took shape.

Since the school was built in sections and only limited floor-slab space was available for casting and erecting, the contractor continually faced the

problem of finding room to move the rig in for the pickup and then move to the positioning point. This called for some careful planning.

Roof purlins are 10-inch WF 25-pound beams placed between the arch bents over the gymnasium, and steel joists for the remainder of the building. A built-up roof was placed over 2-inch planks on all roofs. White limestone was used for roof slagging to deflect the sun's rays.

Other savings were effected by cutting down corridor widths and leaving ceiling bar joists and pipes exposed in classrooms. The result of all these economy measures is a fire-resistant structure built at a cost per

## 2 GREAT NAMES IC

join in the newest, finest portable



• CEDARAPIDS... and SYMONS! Wherever there's crushing, those two names are synonymous with the best and most efficient equipment available.

Now, in these brand new Cedarapids-Symons Cone Crushing Plants, they are joined to give you a plant that combines the great mobility of Cedarapids portable design with the high capacity and low-cost operation of Nordberg-built Symons Cone Crushers.

The result is an aggregate producer's dream! A highly mobile, rugged plant that gives you big volume, low-cost finished crushing of even the hardest or most abrasive rock or gravel to the uniform, finely crushed aggregate required in so many specifications today.

## COMBINE THEGR

### Cedarapids Portability . . . . .

- 100% portability! Easy to take down or set up... wheel right into position in the pit or quarry and start producing.
- Meets legal load limitations.
- Use of Horizontal Vibrating Screen permits lower over-all height.

- Low maintenance is another Cedarapids advantage! Exclusive life-seal bearings on all troughs and return rolls, self-aligning bearings throughout, disc clutches, relieved screen box, free use of alloy steel, easy access for lubrication and service adjustments.



Workmen adjust a sheave on the box beam of the Lorain crane. A stationary center sheave, and as many as four adjustable outside sheaves permit the crane to use 8 pickup points and keep the weight of the panel properly distributed.



### Use a Cedarapids Portable Primary with the Cedarapids-Symons Cone Crusher Secondary

A Cedarapids Portable Primary ahead of your Cedarapids-Symons Cone Crusher Plant increases production still more, especially in quarry operations. The big Cedarapids 3240 Portable Primary will crush from 150 to 300 tons of big quarry rock. The jaw crusher, with 1280 sq. in. jaw opening, will take rock up to 32" x 40" in size and quickly reduce it to 6" feed for the Symons Cone. Cedarapids Jaw Crusher Primaries are available in sizes from 15" x 24" to 32" x 40". Cedarapids Portable Primaries are also available with Deere Impeller Impact Breakers for many quarry conditions.



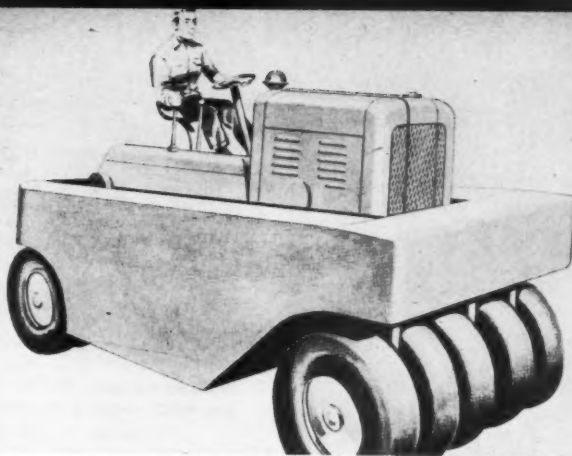
square foot per pupil lower than that for any other school in the state of Connecticut that required a similar site.

Part of the school was completed last September for use by 450 pupils.

#### Personnel

The Gellatly Construction Co. built the school for the Bethany-Orange-Woodbridge Regional High School District No. 5, of which C. Alton Means is chairman of the Board of Education. Fletcher Thompson, Inc., Bridgeport, was the architect and engineer. Sid Carlson, Jr., was superintendent for Gellatly on the project.

THE END



Oscillation of front and rear wheel pairs is one of the new features available on the Bros SP-54 self-propelled pneumatic-tire roller.

#### New Rubber-Tire Roller Is Self-Propelled Model

The Wm. Bros Boiler & Mfg. Co. has announced production of a self-propelled pneumatic-tire roller offering new operating advantages in mat resurfacing, seal coating, and compaction jobs in the shallow lift range. Rolling on 5 front and 4 rear wheels, the new Model SP-54 compacts with a 2,000-pound load on each wheel or 265 pounds per linear inch of rolling width. Compaction width is 68 inches. A 1/2-inch overlap of front and rear tires produces an even coverage over the entire surface.

An important operating feature is that driving power is available to all rear wheels through positive chain drives. The four-wheel drive keeps the roller from being "hung up" by a free wheel. In addition, this new model offers full oscillation of front and rear wheel pairs for thorough compaction without sacrifice of tractive effort.

A 50-hp engine gives adequate power for shallow lift compaction jobs. Equipped with a torque-converter drive, the SP-54 starts smoothly in all forward and reverse speeds. A three-speed transmission with shuttle gear provides the same speeds in forward and reverse, and in ranges up to 18 mph.

The machine is 69 inches wide, 12 feet 6 1/2 inches long, and 82 inches high to top of engine housing. Equipped with uniform hydraulic steering, the roller handles smoothly at any speed and turns around easily in a radius of 18 feet 5 inches.

Capacity of load box is approximately 123 cubic feet. Specifications based on four-ply tires list a maximum weight capacity of 9 tons for the unit at 1 to 5 mph, and a maximum overload of 8 tons at 5 to 10 mph. Recommended load at 10 to 15 mph is 4 tons. The machine uses 7:50 x 15 tires with an 8-inch tread width at the surface.

For further information write to Wm. Bros Boiler & Mfg. Co., 1057 Tenth Ave. S. E., Minneapolis, Minn., or use the Request Card at page 18. Circle No. 539.

#### Austin Co. Names Four New Vice Presidents

Four appointments to executive positions have been made by the Austin Co., engineering and construction firm of Cleveland, Ohio.

Philip K. Davis has been named vice president of the company. With the firm since 1923, Mr. Davis has served in such posts as assistant to the vice president in charge of foreign work and as project manager on two of the large magnesium projects in Ohio and Texas.

John H. McVey will serve as vice president and district manager for southern California, and John N. Beckley will hold the same position in the east. Mr. McVey will make his headquarters in Los Angeles, and Mr. Beckley will have offices in New York and Roselle, N. J. Clayton L. Foster will serve as vice president and manager of the company's special devices division.

## CRUSHING KNOWN THE WORLD OVER

portable crushing plants ever offered!

### SYMONS<sup>®</sup> CONE CRUSHERS

Built by NORDBERG

● Built by Nordberg Mfg. Co., the Symons Cone Crusher is famous throughout the world as the most outstanding crusher ever developed for producing high tonnages of desirable fine-crushed product with the economy that puts more take-home profit in your pocket. It has been proved again and again on every type of job... from trap rock to limestone... for fast reduction of large size feed to a constant, uniform finished product.

Joining the big output of a Symons Cone Crusher with the high screening capacity of a Horizontal Vibrating Screen in this new Cedarapids Portable Plant gives you the best production features of a permanent installation, adds extremely low operating and maintenance costs... and puts it on wheels!

SYMONS...  
A REGISTERED NORDBERG TRADEMARK

## THE GREAT FEATURES

..... Symons low-cost reduction assures uniformly fine-crushed products

- Controlled feed combined with high impact velocity and wide throw of the crushing head permits rapid flow of material and high ratio of reduction in crushing cavity.
- Maximum utilization of the crushing surfaces.
- Produces commercial aggregate from 6" down in one stage, with minimum circulating load.
- Wide adjustment for quick, positive product size changes.
- Requires much less power and liner replacement than other types of crushers.
- Working mechanism entirely enclosed for years of service with minimum maintenance requirements.

# IOWA

## MANUFACTURING COMPANY

Cedar Rapids, Iowa, U.S.A.

IOWA MANUFACTURING COMPANY,  
Cedar Rapids, Iowa, U.S.A.

Gentlemen:

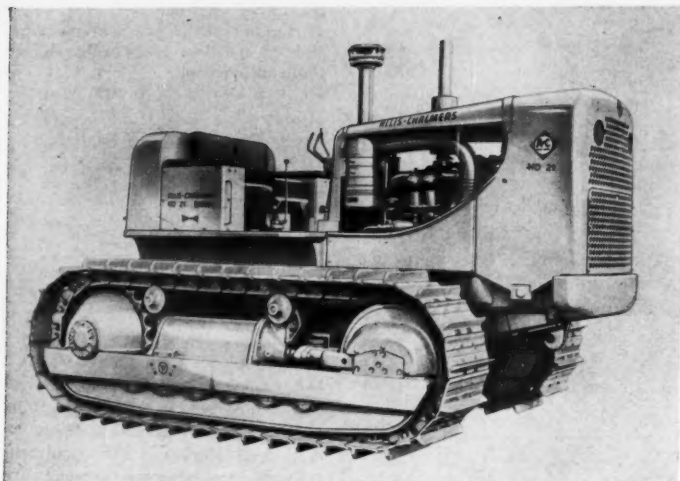
QUICK! Send me full information about the new Cedarapids-Symons Cone Crusher Plant.

Name \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_



The new 204-hp Allis-Chalmers HD-21 diesel-powered tractor.



Powered by a new 280-hp Allis-Chalmers diesel engine, the TS-360 motor scraper has a 20-cubic-yard heaped capacity.

## New Crawler Tractor and Motor Scraper Are High-Capacity Units With New Power Features



## Efficient Handling of Materials is the First and the Best Way to Cut Costs



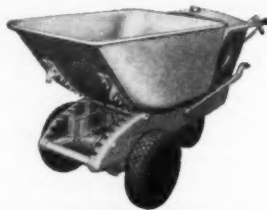
Prime-Mover delivering mortar



Prime-Mover hauling tile

*with power equipment that can be used throughout the job!*

Contractors use PRIME-MOVERS when there is concrete to place—brick to haul—materials to move. PRIME-MOVERS are every-day tools . . . tools that help the contractor to bid lower—build faster—make money. PRIME-MOVERS are sold and serviced by reliable distributors throughout the U.S. and Canada. The coupon is for your convenience.



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THE PRIME-MOVER CO., MUSCATINE, IOWA

Gentlemen: Please send me On-the-Job Reports of Prime-Mover in construction work. Also specification data.

YOUR NAME .....  
 COMPANY .....  
 ADDRESS .....  
 CITY ..... STATE .....

■ The biggest and most powerful Allis-Chalmers crawler tractor ever placed on the market is in production. The new HD-21 weighs 44,000 pounds, develops 204 horsepower at the fly-wheel, and offers a torque converter drive as standard equipment. Among its many new features are the high-capacity cooling system, master clutch, transmission, Tru-Dimension tracks, radiator guard, and new Allis-Chalmers diesel engine.

Allis-Chalmers has also introduced a new motor scraper—the TS-360—with a capacity of 15 cubic yards measured struck and 20 cubic yards heaped. A new 280-hp diesel engine powers this unit.

The power plant for the HD-21 tractor features an advanced combustion chamber design, in which the key explosion occurs in a dual-chamber energy cell with the crankshaft well past top dead center. This results in higher sustained working pressures at the most favorable crankshaft angles, giving greater work capacity, smooth operation, effective lubrication, clean complete combustion, low loading of engine parts, and increased engine life.

The torque converter, engine, and transmission combination used on the new tractor have been designed to provide extra speed with any load, extra pulling power at any speed, wider speed ranges, and more range overlap as compared to previous models. The HD-21 is said to work with less shifting than ever before possible.

The crawler tracks, newly designed and of heavier weight, are processed by new heat-treating methods to optimum hardness with track pin bores electronically annealed to permit machining. This is expected to produce tracks with a high degree of wear resistance. A new wrap-around radiator guard reduces the cost of tractor-bulldozer combinations by permitting the hydraulic rams or cable-lift sheaves to mount directly on the new guard. The guard tilts forward and down for easy service accessibility.

The cooling system used on the HD-21 includes a large one-piece radiator which handles coolant water only, and has an independent mounting to provide maximum protection from external damage. A separate heat exchanger cools the torque converter fluid, and a lubricating oil temperature regulator insures proper operating temperature. In addition, the HD-21 has new features to reduce operator fatigue, such as new foam-

CONTRACTORS AND ENGINEERS



rubber seats and arm rests, hydraulic steering, a wide platform, and unobstructed visibility.

The new TS-360 motor scraper introduced at the same time also offers important new advantages. Weighing 49,000 pounds, the earthmover has a new engine and power train that offer more rim pull at all speeds. Selective steering, another new operating advantage, uses a single hydraulic valve to provide both fine control for use on the haul road and full steering power for easy maneuverability over rough ground.

An air-brake system that includes a protective valve on the tractor unit and an emergency relay valve on the scraper similar to those used on large highway truck-trailer combinations is a further feature. With this arrangement, the system retains adequate air pressure for safe stopping, in the event an air line breaks.

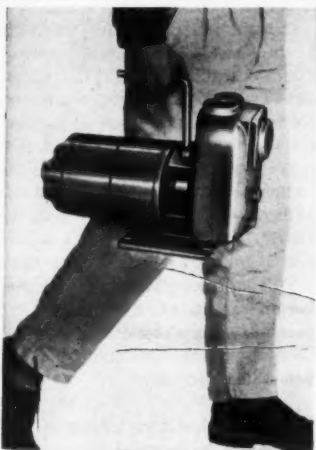
A new tractor main frame facilitates removal and servicing of both major and minor assemblies. For example, the engine can be removed without disturbing the transmission, and the clutch can be taken out without removing the engine.

The scraper's multiple-disc cable control unit has a feature that automatically stops cable travel at maximum lift to prevent cable shock. The scraper has standard Allis-Chalmers features including a curved bowl bottom with offset cutting edge and positive forward forced ejection, as well as high apron lift.

For further information write to Allis-Chalmers Mfg. Co., Milwaukee 1, Wis., or use the Request Card at page 18. Circle No. 542 for more facts on the HD-21 tractor and No. 543 for details on the TS-360 motor scraper.

#### Light Portable Pump

A handy new self-priming utility pump has been developed by Jacuzzi Bros., Inc., Richmond, Calif. Easily carried by hand from one area to another, this addition to the Jacuzzi pump line has been designed for many



The new lightweight Jacuzzi self-priming pump.

smaller pumping jobs requiring either continuous or intermittent service.

The pump uses a semi-open-type impeller and is capable of handling small solids and other foreign matter that may be in the water. Models are operated by an electric motor, a gasoline engine, or a belt drive. A two-wheel hand trailer mounting may be obtained.

For further information write to the company, or use the Request Card at page 18. Circle No. 470.

#### Lightweight Chain Saw Cuts Large-Diameter Trees

A lightweight chain saw that will cut through timber up to 4½ feet in diameter has been added to the Mall MG Series. The Model 3MG is powered by a 1-cylinder two-cycle 5-hp engine. It features advanced diaphragm carburetion and can operate in any position.

A one-hand rewind-type starter, a centrifugal clutch that requires no controls, and an oiler that lubricates the chain sprocket and bar are all automatic. The saw uses interchangeable bars 18 to 54 inches long.

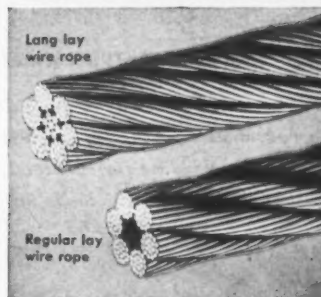
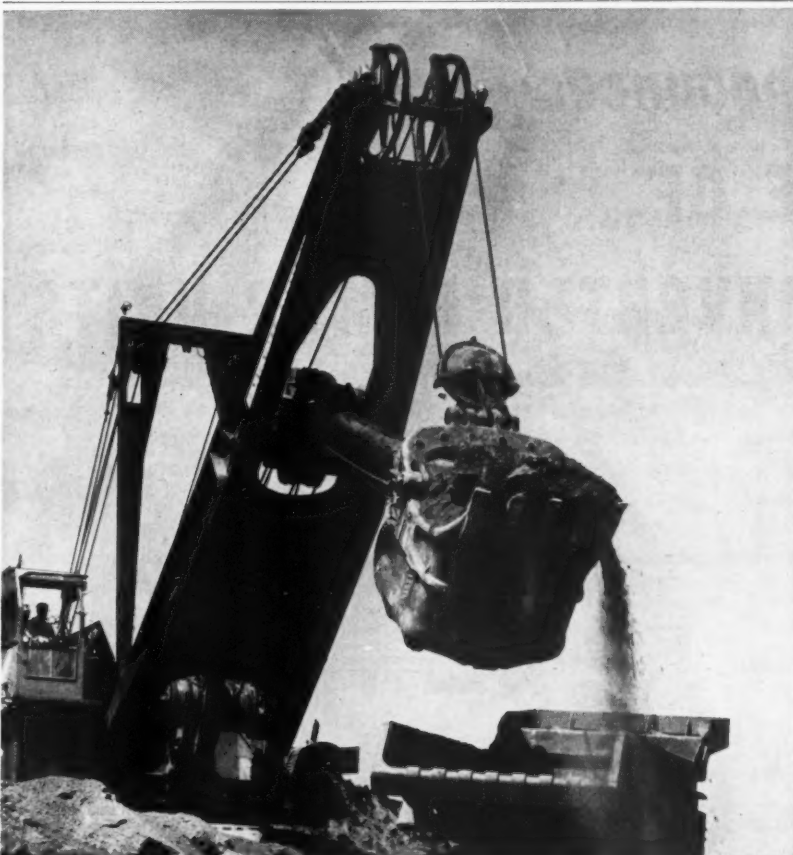
For further information write to

The Mall Model 3MG chain saw.



Mall Tool Co., 7725 S. Chicago Ave., Chicago 19, Ill., or use the Request

Card that is bound in at page 18. Circle No. 405.



## What extra good will Leschen Lang lay wire rope do for you?

Look at a length of Lang lay wire rope. Compare it with regular lay. Notice that the wires in Lang lay rope twist in the *same* direction as the *strands*. In regular lay rope these directions are opposite.

*What does that do?* It makes the exposed length of the outer wires in Lang lay rope about twice as long as in regular lay rope. It has extra bearing surface to withstand wear from scuffing, rubbing and other abrasive action. Also, because Lang lay wires and strands are laid in the same direction, the rope has greater flexibility.

*What's the result?* Simply this—on some types of duty, where abrasion and bending stresses are abnormal, Leschen Lang lay rope definitely lasts longer than regular lay. Replacements are fewer. Costs are lower. And, with Leschen you are assured of *higher-than-rated quality for longer-than-expected wire rope service.*

*Can you use these benefits?* To make sure, ask your Leschen man. Leschen makes all types of Red-Strand wire rope for all types of jobs, and can help select the best one for you. Perhaps you *should* use Lang lay. Talk to him soon.

# LESCHEN

## HERCULES Red-Strand® WIRE ROPE



Depend on Leschen's higher-than-rated quality for longer-than-expected service.

LESCHEN WIRE ROPE DIVISION  
H. K. PORTER COMPANY, INC.  
St. Louis 12, Missouri



## NAMES IN THE NEWS

### Engineering Firm Makes Two Personnel Changes

Construction Service Co., engineering and construction firm of Bound Brook, N. J., has appointed George W. Bond purchasing agent for the company. With the firm since 1953,

Mr. Bond was formerly superintendent and estimator.

The appointment of Nicholas B. Hagerman to the sales-promotion department of the company has also been announced. Previously, Mr. Hagerman was a representative of the Hercules Cement Corp.

### Singleton Opens Office As Consulting Engineer

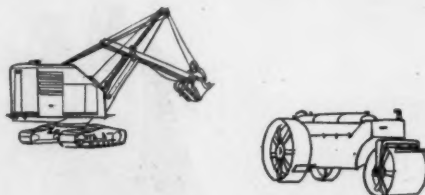
Col. Jack Singleton, civil engineer, has opened a consulting engineering office in Omaha, Nebr., after retiring as chief engineer of the American Institute of Steel Construction, New York, N. Y. His new office is located at 4815 Dodge St., Omaha.

Mr. Singleton served in France as a captain in the U. S. Army Corps of Engineers during World War I, and during World War II he was a major serving as Kansas City Area Engi-



Formerly chief engineer of the AISC, Col. Jack Singleton has opened consulting engineering offices in Omaha, Nebr.

# Caterpillar announces A NEW LINE OF TORQUE CONVERTER POWER UNITS



### WIDE CHOICE OF POWER UNITS

Engine and torque converter

Engine, clutch and torque converter

Engine, clutch, torque converter and reverse gear

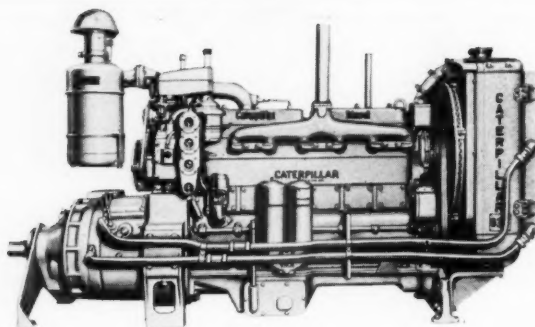
### WIDE CHOICE OF OUTPUT SHAFTS

Standard heavy-duty drive for side loads

Narrow chain housing for side loads

Wide chain housing for side loads

Output shaft for in-line loads only



Now, to provide you with a greater selection of power packages, Caterpillar offers a new line of torque converter units. As many as twelve different torque converter arrangements are available for each of six Cat Engines, up to 480 HP. Whatever your power needs in excavators, cranes and other construction equipment, you'll find the right unit in Caterpillar's line.

In offering torque converter power, Caterpillar has combined extensive research with years of practical application in the field. Here are owners' reports of units on actual jobs: "Live and snappy with plenty of power" ... "We get an abundance of power out of these torque converter power units."

Either as original or replacement power, it will pay you to check the advantages of torque-converter-equipped Cat Diesels. Each is matched to do more work at lower cost with less down time than any competitive unit. Leading manufacturers of construction machinery can supply these money-makers in the equipment they build.

For complete details about these production boosters, see your Caterpillar Dealer. He has the experience and technical knowledge to help you with your power problems. He has trained personnel who know how to install engines and torque converter power units in construction machines. Call him today!

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

## CATERPILLAR\*

\*Both Cat and Caterpillar are registered trademarks—®

THE NEW STANDARD  
OF TORQUE  
CONVERTER POWER

### Fast Facts About CAT\* Torque Converter Power Units

- 1. Torque output is automatically matched to the load.
- 2. Loads start smoothly.
- 3. Load movement can be controlled without using the clutch.
- 4. Overloads cannot kill the engine.
- 5. Need no special hydraulic oil—their fluid is engine fuel—fluid level automatically maintained.
- 6. Cat Diesel Engine burns non-premium fuels cleanly and efficiently, even when idling.
- 7. Caterpillar can supply your torque converter requirements from stock.
- 8. Caterpillar Dealers have facilities and parts for servicing torque converters.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS, U.S.A.  
Please send me further information on Cat Diesel Torque Converter Power Units

Name \_\_\_\_\_  
Company \_\_\_\_\_  
Street \_\_\_\_\_  
City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

neer. After being graduated from Command and General Staff School at Fort Leavenworth, Kans., during World War II, he served as executive officer of the engineer section, Desert Training Center CZ. The latter part of the war saw him serving as chief of the bridge branch, Office of Chief of Engineers, in Washington, D. C., where he supervised the planning and testing of all types of military bridges.

Assuming inactive status in 1945, Mr. Singleton became chief engineer of the AISC. He had first joined the organization as a district engineer in 1928.

A licensed professional engineer in New York, Kansas, and Nebraska, Mr. Singleton is a member of The American Society of Civil Engineers, National Society of Professional Engineers, and Society of American Military Engineers.

### Earl Powell Is Elected Vice President of Tuloma

The Tulsa, Okla., engineering and construction firm of Tuloma Builders, Inc., has elected Earl Powell, prominent construction engineer in the Arkansas-Oklahoma-Louisiana area, as a vice president of the company.

In his new position, Mr. Powell will be in charge of all general construction work for Tuloma in Arkansas and Louisiana and will head the company's sales program in the two-state area.

Previously, Mr. Powell served as an engineer and job superintendent with Midwestern Constructors, Inc., of which Tuloma formerly was a part, and also as an engineer with Alcoa.

Tuloma specializes in the engineering and construction of gasoline, industrial, and chemical plants, gas compressor and oil pump stations, and waterflood units.

### Stewart J. Cort Wins Mineral Industry Award

The first Benjamin F. Fairless Award, to be given annually in recognition of distinguished achievement in iron and steel production and metallurgy, was presented last month to Stewart J. Cort, vice president of the Bethlehem Steel Co.'s steel division and a director of the Bethlehem Steel Corp.

The award was made February 16 in Chicago at the annual banquet of the American Institute of Mining and Metallurgical Engineers, Inc. The AIME originated the award this year after a grant from the U. S. Steel

CONTRACTORS AND ENGINEERS



Corp. and named it in honor of the chairman of U. S. Steel.

Elected vice president of Bethlehem's steel division in 1948, Mr. Cort had held various other managerial posts since joining Bethlehem in 1917.

Prior to his affiliation with Bethlehem, Mr. Cort was associated with the Midvale Steel & Ordnance Co., and earlier, with Carnegie Steel Co.

### Mitchell and Olmstead Promoted by Ferguson

Thomas H. Mitchell and Ralph W. Olmstead have been named vice presidents of the H. K. Ferguson Co., Cleveland, Ohio, engineering and construction firm. Mr. Mitchell will



Thomas H. Mitchell, newly appointed vice president of the H. K. Ferguson Co., Cleveland, Ohio.

assist the president in construction matters, and Mr. Olmstead will be concerned with new business.

With Ferguson for 32 years, Mr. Mitchell was formerly main office construction manager. He supervised company work in Japan, Korea, and Mexico from 1923 to 1932, and directed construction of a number of World War II defense facilities.

Mr. Olmstead joined the company as assistant to the president in 1954. Previously he had been manager of special projects for Morrison-Knudsen Co., Inc., Boise, Idaho.

### AGC Elects New Officers

Representatives of 6,500 construction firms in the United States and Alaska have elected officers and district directors to head the Associated General Contractors of America, Inc., for the current year.

George C. Koss, president of Koss Construction Co., Des Moines, Iowa, and former vice president of the association, has been elected president. He will be assisted by Frank J. Rooney, president of Frank J. Rooney, Inc., Miami, Fla., as vice president.

Both Mr. Koss and Mr. Rooney, who will serve one-year terms, will take office at the close of the 36th annual AGC convention this month in New Orleans. Twenty-three new directors, representing the 12 AGC districts, will also take office at this time.

### Thompson-Starrett Official

Joshua A. Davis, chairman of the board of the investment banking firm of Blair & Co., Inc., has been elected to the board of directors of Thompson-Starrett Co., Inc., engineering and construction firm which has main offices in New York, N. Y., and manufacturing facilities near Harvey, Ill.

Following the annual Building Trades Employers' Association dinner in the Waldorf-Astoria Hotel in New York City January 12, George Meany, (center), president of the American Federation of Labor, clasps hands with Peter W. Eller, (left), chairman of the BTEA board of governors, and William B. F. Drew, president of BTEA. Mr. Meany, principal speaker at the affair, stressed the importance of continued cooperation between BTEA and labor in his address before more than 1,100 contractors, state and city officials, and AFL union leaders.



## Highway 66 in Illinois gets new look with STANDARD ASPHALT

U. S. Highway 66 north of Springfield, Illinois is the key roadway link between the state capital and metropolitan Chicago. It gets some of the toughest traffic of any highway in the state. In 1954, approximately 47 miles of new dual lane highway were completed running parallel to the original highway. STANDARD Asphalt was used for resurfacing the cracked and worn pavement, restoring the route to new capacity, providing a safer and more comfortable ride for every car owner. The contractor on this project got these advantages by specifying STANDARD Asphalt:



- Asphalt available from 5 convenient Midwest shipping points.

- A supplier familiar with contractor problems. Standard Oil has been a supplier of asphalt to contractors in the Midwest for many years. Company knows contractors' needs and delivers.

- Standard provides tank truck as well as tank car deliveries. Proximity of shipping points to job sites often makes tank truck delivery practical and economical.

- Sure delivery on contracts. A contractor knows that buying from Standard provides him with an assured source of supply.

Like to know more about STANDARD Asphalt and Road Oils? In the Midwest call your nearby Standard Oil office. Or write, Standard Oil Company, 910 South Michigan Avenue, Chicago 80, Illinois.

U. S. Highway 66 north of Springfield, Illinois. During 1954 about 47 miles of road were converted to dual lane highway using STANDARD Asphalt.



**STANDARD OIL COMPANY**  
(Indiana)

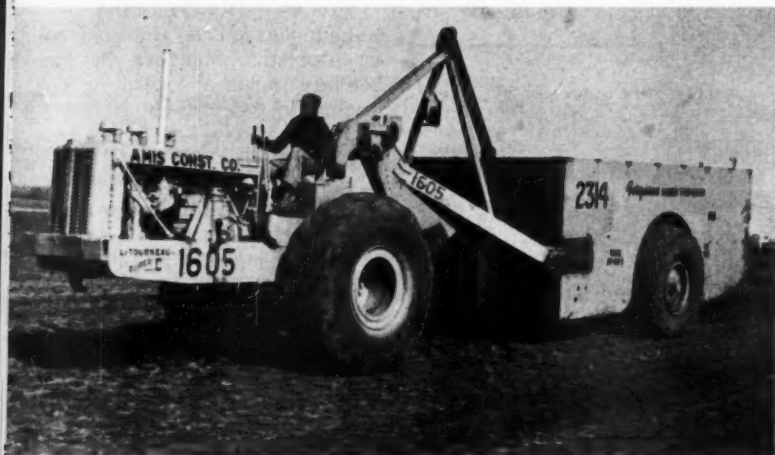


Cutting into a 4-foot-high bank, a Euclid loader fills a bottom-dump Euclid in about 20 seconds. The loader is pulled by a pair of Caterpillar D8 tractors.

C&E Staff Photos



Pulled by a Caterpillar D8 and push-loaded by an Allis-Chalmers HD-20, a Cat 80 scraper strips topsoil from the runway. The material, stockpiled less than 1,000 feet away, will be used later to dress shoulders.



Pneumatic-tire compaction is provided by this combination of a Super C Tournapull and a Ferguson 50-ton roller as it moves over the leveled fill.



One of the Gebhard sheepfoot rollers on the compaction work—each 6×6-foot drum ballasted to weigh 50,000 pounds—is pulled by a Cat D8 tractor while a Caterpillar No. 12 motor grader shapes the fill.

## Jet airstrip combines

**P**aving a 2-mile-long and 200-foot-wide runway with a combination of flexible and rigid paving constituted one of the major projects undertaken last year as part of a huge rehabilitation program at Lincoln Air Force Base, Lincoln, Nebr. This job required a total of 2,510,000 cubic yards of unclassified excavation—much of it the result of a need to divert a creek around one end of the north-south runway.

The 10,600-foot jet-base runway—one of the few combining both concrete and bituminous paving—has a 19-inch-thick slab of concrete for 1,000 feet at each end, together with concrete warmup aprons. The remainder of the runway and the taxiways have compacted flexible bases with about 4 inches of bituminous surfacing.

The entire improvement program at the base totals almost \$20 million in U. S. Army Corps of Engineers' contracts. In addition to all this work, the U. S. Navy is constructing a large hangar and other facilities on the opposite side of the field. Taxiways and allied work are scheduled to be completed this June under the \$3,551,644 grading and paving contract for the runway. The contract for the work was awarded last February to Amis-San-Ore Contractors, a joint-venture firm composed of Amis Construction Co., Oklahoma City, Okla., and San-Ore Construction Co., McPherson, Kans.

As soon as the contract was awarded, the contractor moved onto the site with several spreads of grading equipment. Since the project included long and short-haul grading, ditching, pipe-laying, and other features as well as base work and paving, a diversity of equipment was required. Topsoil which could be used for dressing shoulders with hauls of 1,000 feet or less was stripped and stockpiled by a spread of five Caterpillar D8 tractors with Cat 80 scrapers. An Allis-Chalmers HD-20 push tractor assisted the Cats on the loading cycle. This spread continued with short-haul grading when the stripping was completed.

Longer hauls were handled by either Euclid scrapers or a Euclid loader and a fleet of bottom-dump "Eucs". The scraper spread consisted of seven Euclids, two of 18 yards capacity and five with a capacity of 16 yards. An

Allis-Chalmers HD-20 tractor and an International TD-24 push-loaded these units. In cases where hauls were long and conditions advantageous, the Euclid loader and its fleet of ten 14-yard bottom-dump "Eucs" went to work. Hauls for these units in some cases exceeded 1 1/4 miles. Two Caterpillar D8 tractors pulled the loader.

### Roller Compaction

On the fills, Caterpillar D7 and D8 tractors with dozers leveled the loads and assisted with compaction. Two of the big Gebhard sheepfoot rollers, weighing 50,000 pounds per drum, and two 50-ton rubber-tire rollers easily met compaction requirements for the various classes of materials. The sheepfoot rollers were towed by Caterpillar D8 tractors. One of the big rubber-tire rollers, a Ferguson, was pulled by a LeTourneau Super C two-wheel tractor. The other, a Bros, was pulled by a Euclid four-wheel tractor. Three Caterpillar No. 12 motor graders shaped the embankments and maintained the haul roads.

Runway grading sections required practically no cut. Embankments were built largely of material which was excavated when a stream crossing the runway alignment was diverted. This creek, which had been diverted around some of the base facilities during original construction in the 1940's, nearly bisected the runway. Because of the relatively large structures required to handle the probable flood flows, and because borrow material was desired for the runway grade, the designers chose to divert the stream rather than build extensive conduits to carry the water under the runway.

Construction of this new creek channel involved approximately 2,000,000 cubic yards of excavation. The new channel has a bottom 100 feet wide with 2 to 1 and 3 to 1 side slopes. The normal section is 16 to 20 feet deep, but at the extreme southwest end of the runway the channel digs into a hill where the cuts were as deep as 72 feet. Most of the channel excavation was done with the several types of grading equipment, and all suitable material was incorporated into the runway embankments. In a swampy area west of the runway, a Northwest 80-D dragline with a 3 1/2-yard Hendrix bucket excavated the channel and cast

CONTRACTORS AND ENGINEERS





One of the three types of aggregate required for the base is unloaded in a neat windrow on the runway grade by an International R190 truck with Insley trailer.



A Wood windrow evener pulled by a Caterpillar No. 12 motor grader straightens and measures the windrow to insure proportions for the base.

## ine concrete and blacktop

**Three types of base material used under flexible pavement; project requires 2,510,000 yards of excavation**

the material on a spoil bank.

Sections of the old creek bank which run through the built-up area of the base were straightened and riprapped. A Marion 43-M and a Koehring 304 with dragline buckets cleaned up the old channel and straightened the sides where necessary. Approximately 100,000 square yards of old concrete pavement was broken up by the Koehring 304 with a 3,000-pound breaker ball. This broken concrete was loaded by a

Tracto-Shovel on an Allis-Chalmers HD-9 tractor into end-dump and bottom-dump "Eucs", which hauled it to a stockpile for later use as riprap on the stream banks.

### Placing Storm Drains

Although the proximity of the stream bed made storm drainage relatively simple, a substantial amount of pipe had to be installed. Storm drains required 15,894 linear feet of double-strength reinforced-

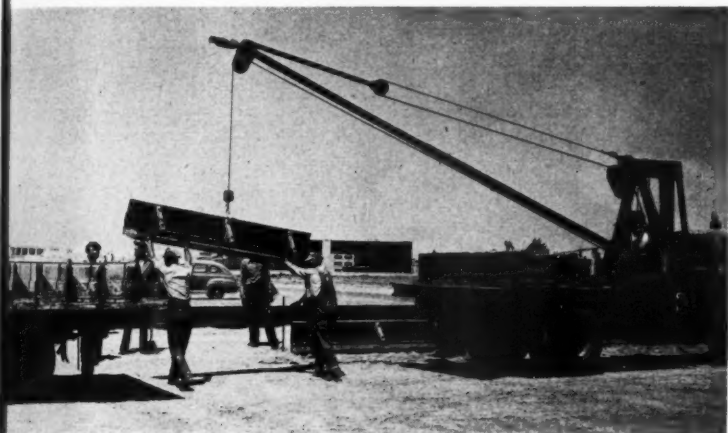
concrete pipe in sizes ranging from 18 to 78 inches. In addition there were 1,600 feet of metal culverts—in sizes from 18 to 84 inches—extending through the dikes along the stream. The lower ends of these pipes were fitted with Armco flap gates to prevent the stream from backing up into the storm drains.

Trenching for the pipe was done by a Marion 43-M backhoe with a 1-yard bucket. The Lock-Joint concrete pipe, furnished by Wilson Con-

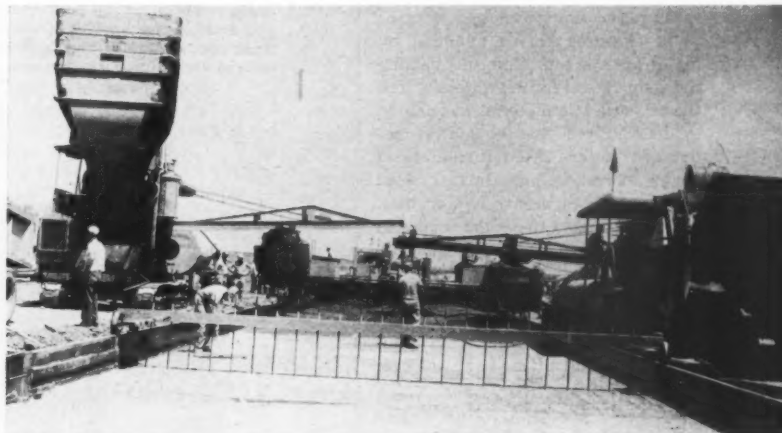
crete Co., Red Oak, Iowa, was placed by the Koehring 304 crane. An International TD-14 tractor with Bucyrus-Erie dozer backfilled the trenches. Trenches were carefully compacted as they were backfilled and then thoroughly rolled with an American five-wheel rubber-tire roller pulled by an International ID-9 wheel tractor.

### Pavement Has Thick Base

Specifications for the flexible-base paving section called for five courses



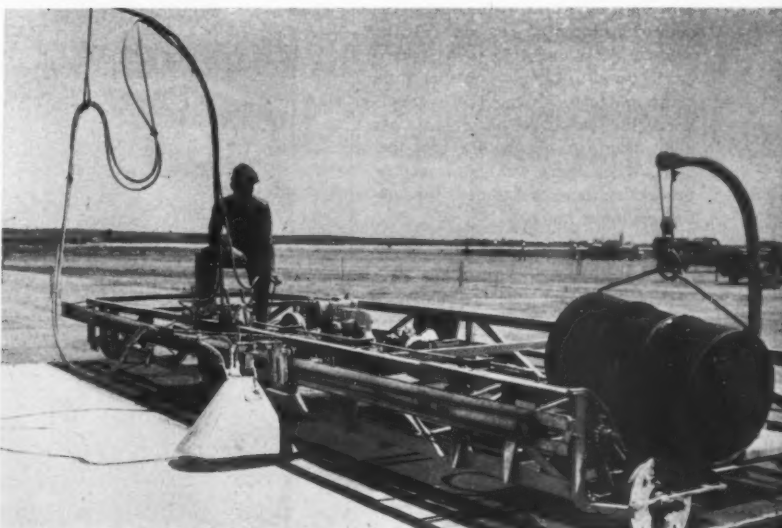
Blaw-Knox steel forms, with 5 inches of plank at the bottom to give them a 19-inch height, are unloaded at one end of the runway by a Pitman Hydra-Lift mounted on a Ford truck. Both ends of the runway have 1,000-foot-long concrete sections.



Concrete is mixed by a Rex 34-E dual-drum paver, right, and a Foote 34-E single-drum machine, left, as the Jaeger spreader distributes the material. The long-toothed scratch template first checks the grade.



Ten 3-inch Viber electric vibrators, and the 25-kw generator which powers them, ride the forms on a specially constructed unit pulled by the Jaeger spreader.



The fresh concrete is given an application of Serviced white pigmented curing compound from a Flexible Road Joint Machine.

of base and surfacing material, with the total depth varying from 33 to 47 inches. On the subgrade is a course of material, which specifications required to have a CBR of at least 20, and which ranges from 16 to 30 inches in depth, depending on the nature of the underlying subgrade. Next is a course of 35 CBR material, 7 inches thick, followed by the final base course of 6 inches of 80 CBR material. A 4-inch bituminous surface is composed of 2½ inches of binder and 1½ inches of surfacing material.

In meeting gradation requirements—which were also included in the specification—the contractor found he was easily able to exceed the CBR requirements, so he used the same material for the entire base depth. After extensive sampling and testing of various combinations of materials, a mixture of 50 per cent of pit-run material from a local pit was used. This, crushed to maximum 1-inch size, was combined with 30 per cent of Platte River gravel and 20 per cent crushed limestone graded from 1 inch down to number 4. These materials formed a well graded angular mixture which compacted readily and gave CBR readings over 100.

To produce the local pit-run material, the contractor set up a crushing, screening, and loading plant in a pit near Emerald, Nebr., about 10 miles from the job. Two Caterpillar tractor-dozers, a D7 and a D8 with a U-dozers, carried the material from the pit to a trap which fed a 30-inch Pioneer conveyor. The 86-foot conveyor raised the gravel to a Symons 3×11 two-deck screen mounted on top of a surge bin. Materials passing the 1-inch screen fell directly into the bin. Oversize material was chuted to a Cedarapids 10×36 jaw crusher powered by an International diesel engine. Crushed materials traveled on a second Pioneer conveyor back to the trap where they were combined with the gravel being fed in from the pit.

Insley trailers pulled by International K8, R190, and R200 trucks carried 17-ton loads from the plant to the job. Most of the haul was over paved highways. The bin which loaded the trucks by gravity also stored the gravel, permitting the plant to run continuously and the trucks to load rapidly.

Early in the season, a great deal of wet clay was encountered in the pit. This clay rolled into balls which remained on top of the screen with the oversize rock, and had to be picked out by hand to keep the crusher from being plugged. Under these conditions, the output of the plant was held down to about 100 tons per hour. When there was less moisture, production increased to near the 200-ton-per-hour mark.

#### Crushed Rock Production

Crushed rock, produced by Amis Construction Co. in a quarry about five miles east of Weeping Water, Nebr., was shipped about 40 miles to the job by rail. In the quarry an 80-D Northwest shovel loaded blasted rock into three end-dump Euclids which hauled to a hopper feeding the primary jaw crusher. After passing the 24×48 Pioneer primary crusher, all material passing the 3/8-inch screen was removed by a Cedarapids screen. This eliminated most of the shale



Sand and gravel for the base course rides up a Pioneer 30-inch conveyor, passes over a Symons two-deck screen, drops into a bin, and then to an Insley trailer beneath. Oversize returns to the crusher on the other conveyor.

C&E Staff Photo

and other undesirable elements. The coarse material was then fed through a Cedarapids 18×36 jaw crusher and a Pioneer 24×54 triple-roll crusher onto a Pioneer belt conveyor feeding the Pioneer Model 4D secondary plant.

In the secondary stage, the rock passed through a triple-deck screen, 12×36 jaw crusher, and 12×24 roll crushers. A closed circuit insured that all materials were reduced to minus-1-inch. Rock passing the 1/4-inch screen was rejected for the base material. This same plant produced crushed-rock aggregate for the hot-mix surfacing, but the fraction passing the 1/4 was not rejected for this material.

To transfer crushed rock from rail cars to stockpiles or to the Insley trailers which haul to the job, Amis-San-Ore set up an aggregate-hand-

## PRESENTING THE NEW International

THE NEW, 200 NET HORSEPOWER INTERNATIONAL TD-24, most powerful Torque Converter crawler on the market, developing 59,500 lbs. maximum drawbar pull at a workable speed of 0.8 m.p.h. brings new speed, new maneuverability to any pushloading job. And for logging and pipeline work, too, nothing can match this latest addition to the long line of INTERNATIONAL Industrial Power products for smooth, efficient power.





ding plant capable of unloading as many as 40 carloads of 72 tons each in a 10-hour day. This setup also transferred the Platte River gravel shipped in by rail from commercial plants. The transfer plant was located on a rail siding about one and a half miles from the end of the runway.

Aggregates flowed from the hopper-bottom rail cars to a 125-foot-long Atlas conveyor with a 24-inch belt. A National Electric car shaker hastened the unloading and assured that no material would be left in the cars. The discharge end of the conveyor was fitted with a gate which could be adjusted to discharge onto a second conveyor leading to the stockpiles or directly into a 20-yard Butler bin from which the Insley trailers were loaded.

Material to be stockpiled continued

upward on the second 24-inch conveyor another 50 feet. Here, on top of a high timber trestle, it was transferred to a shuttle conveyor mounted on a track on the trestle. This conveyor carried the aggregates 34 feet either way at right angles to the inclined conveyor dropping them in stockpiles. Recovery from the stockpiles was accomplished by 24-inch Atlas conveyors 50 feet long which operated inside 84-inch corrugated-metal culvert tunnels. With this arrangement there was no delay unloading cars regardless of weather conditions, availability of trucks, or other job factors.

As the Insley trailers arrived on the runway the three types of materials were carefully spotted and unloaded in separate and uniform windrows. Each of these was then carefully calibrated by a Wood



Aggregates for the base, received by rail, move from the pit up an Atlas conveyor to a Butler 20-yard bin, where an International truck with Insley trailer is loaded. Material bypassing, the bin flows to the shuttle conveyor which stockpiles aggregate over recovery tunnels.

C&E Staff Photo

# Torque Converter

**Greater power—200 net engine h.p.; greater pull—59,500 lb. maximum drawbar pull at 0.8 m.p.h.; matchless maneuverability—finger-tip steering with famous Planet Power Drive in combination with four forward and four reverse speeds; all the features that mean greater operator ease, greater operational economy on your biggest jobs**

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The new INTERNATIONAL 200 horsepower TD-24 Torque Converter crawler tractor.

Features that put the new Torque Converter TD-24 in the No. 1 spot include:

- World's most productive torque converter system—multiplies torque up to five times.
- 200 net engine horsepower converted into 59,500 lb. maximum drawbar pull at 0.8 miles per hour.
- Finger-tip hydraulic control with INTERNATIONAL's famous Planet Power Steering in combination with four forward and four reverse speeds to 6.9 miles per hour for matchless maneuverability, unequalled profit-making performance.
- Instantaneous high-low range shift with all transmission shifting being done with just one gear shift lever.

● INTERNATIONAL's exclusive "Decelerator" feature gives the operator complete control of the crawler's engine speed at all times. In pushloading, this enables him to match the speed of the pusher to that of the scraper and make smooth contact without jarring pushed equipment or its operator. It takes the shock loads out of shifting... gives a smoother performing machine on the pipelines and pulling belt loaders, as well as on dozing jobs.

All attachments to the standard INTERNATIONAL TD-24 are interchangeable with the Torque Converter model, including push-plates, bulldozers, Bullgraders and sidebooms.

For the smoothest package of power you ever saw in action, contact your INTERNATIONAL Industrial Power Distributor today. Ask for a demonstration of the INTERNATIONAL TD-24 Torque Converter... the most efficient torque converter crawler for any big job.

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windrow evener pulled by a Caterpillar No. 12 motor grader to insure the proper proportion of each aggregate in the final mix. The three windrows were then combined and thoroughly mixed by motor graders. To obtain optimum moisture for compaction, water was added by three 4,500-gallon water wagons. One was pulled by a Caterpillar DW-10, another by a Euclid tractor, and the third by an available truck. Water was pumped from the creek to a 10,000-gallon storage tank by a 3-inch Jaeger pump powered by an electric motor. Water was discharged from the elevated tank to the trucks by gravity.

Base material was spread in layers which compacted to 3 inches in thickness. Compaction was applied by a group of 13-wheel Bros rubber-tire rollers, and the resulting densities were well above those required to obtain the CBR values required by the specifications.

## Bituminous Paving

Paving work on the bituminous portion of the runway got under way last summer. Runway paving was completed late last year, and taxiways are scheduled for completion before the end of this June. The bituminous mixture is being produced in a Pioneer Model 101 Continuflo plant. The 50-ton three-compartment bins of the plant are fed by a Koehring 305 crane with 1½-yard clamshell bucket. A reciprocating feeder puts the aggregates on a belt which feeds the cold end of the dryer. A hot elevator carries the dried materials to a screening unit which separates them into three sizes. Calibrated gates proportion the materials to the conveyor leading to the pugmill.

On the compacted base, a prime coat of MC-1 cutback asphalt was applied with an Etnyre distributor. Barber-Greene finishers then laid the binder and surfacing materials, each course receiving a tack coat of RC-2 cutback asphalt before the next course was laid. Huber 10-ton three-wheel rollers and 7½-ton tandems rolled the several courses. Rubber-tire rollers were used on the finished surface to seal it as tightly as possible against the action of jet fuel and weather.

## Concrete Paving

Concrete sections at both ends of the runway and two large concrete warmup aprons required almost 95,000



A Marion 43-M backhoe excavates a trench for a drainage line while an International TD-14 tractor with dozer removes the excess dirt.



An American 5-wheel roller, pulled by an International ID-9 tractor, compacts backfill over a pipe trench. Work continued around the power line, background, but since the line crossed the runway, it had to be relocated later.

C&E Staff Photos



## New Powerhouse on wheels!

Both the 5 and 10KW models are available with 2-wheel trailer, 4-wheel dolly, or skid-mounting.

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(Continued from preceding page)  
square yards of 19-inch-thick concrete paving. This portion of the project was subcontracted to Able-Dobson-Robinson, Lincoln, Nebr., which had recently completed other concrete paving operations on the field. A-D-R also furnished, placed, and compacted the 4-inch layer of granular subgrade material under all the concrete paving.

The batch plant for the paving operation was set up on the Chicago Burlington & Quincy tracks near the north edge of the field. Cement was batched from three plants, a Johnson plant with 300-barrel silo and two Blaw-Knox plants with 300 and 400-barrel capacities. All were equipped with twin batch scale hoppers and automatic strip recorders. Sand and crushed rock aggregates were handled through four Blaw-Knox 100-ton bins. Two Koehring 605 cranes with 1¾-yard Blaw-Knox clamshell buckets and two Koehring 304 cranes with 1-yard Blaw-Knox clamshell buckets charged the bins. This batching setup supplied two paving outfits, each of which included two pavers.

Runway and aprons were paved in strips approximately 25 feet wide, and except for the thickness of the slab, the work very much resembled normal highway paving. Planks were

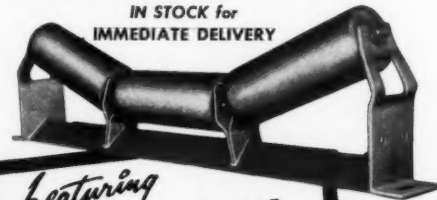
added to the bottom of 14-inch steel forms to build them up to the 19-inch height. Though this made the form sections relatively heavy, they were handled easily by a Pitman Hydra-Lift mounted on a Ford truck. Form stakes were driven by a Thor hammer and forms were tamped with Thor tamping units. Air for both was supplied by a Le Roi 105-cfm compressor. After a Caterpillar No. 12 motor grader bladed the subgrade to approximate grade, finishing touches were applied by a shop-made fine-grader pulled by a Caterpillar D6 tractor.

Concrete was mixed and placed by a 34-E Rex dual-drum paver and a single drum 34-E Foote paver. As these deposited the concrete in the same lane from opposite sides, a Jaeger spreader leveled the material. The spreader also pulled a vibrating machine, assembled by Shovel Supply Co., consisting of ten 3-inch Viber electric units. These were powered by a 25-kw generator driven by a Le Roi engine. A Blaw-Knox finisher and Koehring longitudinal float completed the finishing operation. Serviced white-pigmented curing compound was applied by a Flexible Road Joint Machine. Since this white pigment absorbed less heat from the sun, it helped maintain a uniform temperature throughout the slab and

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CONTRACTORS AND ENGINEERS



minimized surface cracking. A second paving spread consisted of similar equipment, but the pavers were both Koehring's, and the spreader was a Blaw-Knox.

A typical 37.4-cubic-foot batch of concrete contained:

|             |              |
|-------------|--------------|
| Sand-gravel | 2,980 pounds |
| Rock        | 1,312 pounds |
| Cement      | 5.75 sacks   |

Vinsol resin air-entraining agent was added to produce 6 to 9 per cent air. The water-cement ratio was 4.8 and slump was from 1½ to 2 inches. With a 75-second mixing time, the dual-drum pavers turned out an average of 70 batches per hour, and the single-drum machines, 40 batches.

The taxiway, when completed, will have a stabilized shoulder 25 feet wide on each side, consisting of 2 inches of asphaltic concrete over a 6-inch stabilized aggregate base. The runway shoulders will be surfaced with topsoil and seeded.

#### Personnel

Supervising the Amis-San-Ore crew, which at a maximum exceeded 200 workmen, is P. C. Royer. He is assisted by P. L. Gardner, project engineer, and Vernon Stuart, office manager. Adna Dobson, a partner in Able-Dobson-Robinson, supervised the concrete paving. Ira Hill was superintendent, and Carl Walls, paving foreman.

The project was supervised from the Omaha District of the U. S. Army Corps of Engineers, for which Col. Thomas J. Hayes III, is district engineer. Area engineer on the project is Earl W. Fiala. Assistant area engineer is Almer Stark. Field construction engineer is Tom Cosgraves. THE END

#### Esco Makes Appointment

Fred J. Acord has been appointed district representative of the Electric Steel Foundry Co., Portland, Oreg., in the Middle Atlantic States territory.

The company's construction machinery dealers in this area are served by Esco's New York, N. Y., branch.

This New Moon mobile trailer is equipped to bring the convenience of shower and locker facilities to the site.

#### Trailers Equipped as Shower and Locker Rooms

Mobile trailers, long used by contractors as fully-equipped field offices and as temporary housing quarters, are now being equipped to bring other conveniences to the job site. Two 41-foot trailers recently made by New Moon Homes, Inc., Alma, Mich., for Inland Steel Corp. are typical of the new facilities available on wheels.

One of the units, which includes a supervisor's office with private toilet and shower, also has showers and lockers for twelve foremen and skilled workmen. A second trailer includes showers, washroom, toilet facilities, and thirty-three lockers for other workers. Two other trailers delivered at the same time are standard mobile offices equipped with a drafting room, blueprint files, shower, and clean-up facilities.

For further information write to the company, or use the Request Card at page 18. Circle No. 525.

#### Louis Newburg Retires As Construction Executive

Louis J. Newburg, a pioneer in the dredging industry in this country, has retired from the Gahagan Construction Corp., New York, N. Y., after more than fifty years of service.

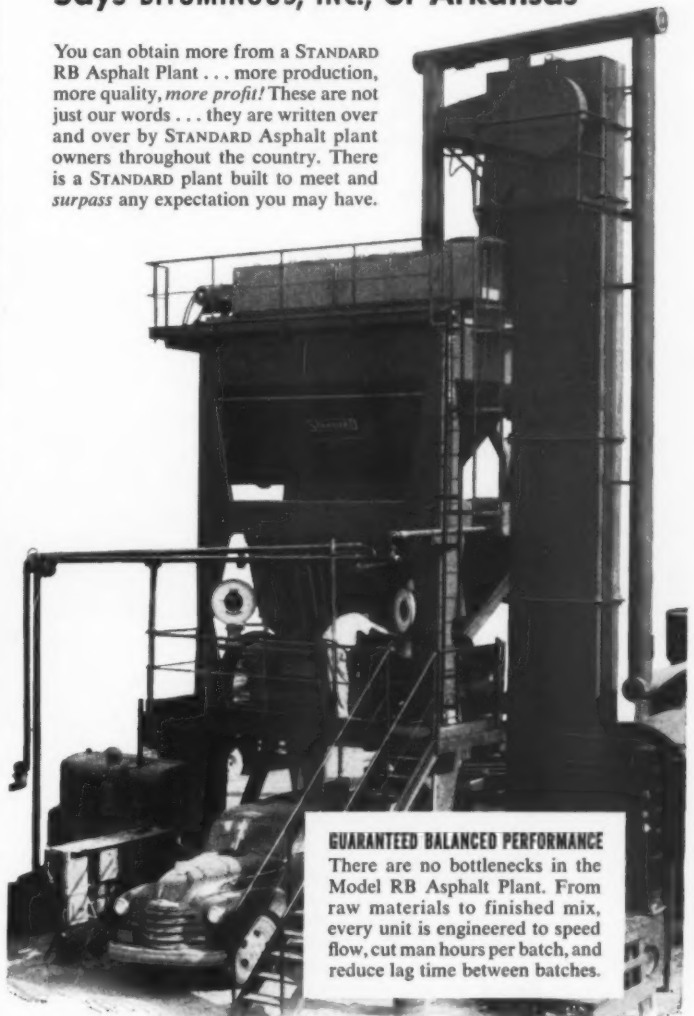
During World War I, Mr. Newburg superintended the construction of several army camps, and later was in charge for Gahagan on such New York dredging jobs as extending Rockaway Beach 500 feet into the ocean and filling in 22 miles of highway at Jones Beach. He also served as Gahagan representative on the building of New York's Idlewild Airport and Boston's Logan International Airport.



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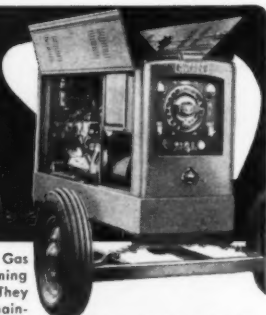
Speed up your work and cut welding costs with Hobart Gas Engine Drive Arc Welders. You'll avoid time-consuming breakdowns that delay the job and roll up the costs. They can be used anywhere to fabricate steel or repair and maintain equipment. No need for power—they provide their own. And there's a type and size for every construction job.

For extra heavy duty welding, contractors favor the Hobart DC Gas Drive Welders ranging up to 600-ampere capacity, with many combinations of auxiliary power.

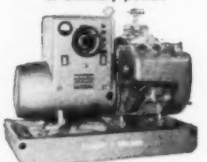
Others like the combination AC Arc Welder and AC Stand-by Power Unit. Welds or powers lights, tools.

Many contractors are standardizing on the 250-amp "Contractor Special." A full capacity 250-ampere welder, compact and lightweight for easy moving from job to job.

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AC Arc Welder-AC Stand-by Power Unit.



"Contractor Special" Arc Welder.

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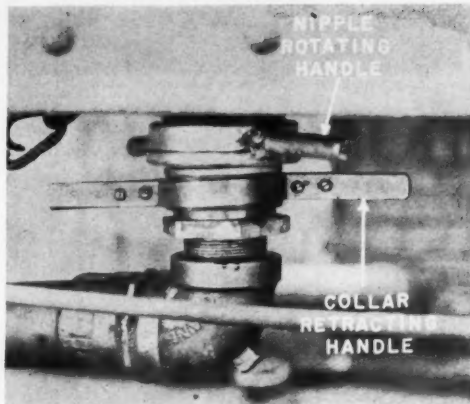
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## Hose Coupling Saves Labor In Tank-Car Unloading

Contractors can cut down the labor required for unloading tank cars—and yet make this operation more safe by the use of a unique hose coupling manufactured by Titeflex, Inc., 10 Hendee St., Springfield 4, Mass.

Tank-car unloading ordinarily requires connecting a flexible hose to the tank car by a threaded coupling. This means using a large wrench in the restricted space below the tank car, making for a laborious job that often takes two men a half hour to do.

Designed to overcome these difficulties is the threaded Quick Seal coupling nipple that can be screwed onto the tank car discharge fitting. This nipple is provided with handles so that the coupling can be screwed on without use of a wrench. The cou-



The laborious job of making a tight hose connection with the discharge fitting of a tank car is made easier with the use of Titeflex Quick Seal threaded coupling nipple. Handles on the nipple are for tightening without the use of a wrench. Handles on the collar help to retract it to connect or disconnect.

pling body attached to the flexible discharge line also has handles on a collar which is easily retracted, permitting the coupling body to slip over

the nipple. Releasing the coupling collar locks the coupling ends together and completes a leak-proof connection from the tank car to the

discharge line. One man can do the entire job in minutes.

For further information write to the company, or use the Request Card at page 18. Circle No. 459.

## New Welding Electrode For Cast-Iron Repair

A new non-machinable cast-iron electrode for repair work in which finish may be ground or left as welded, is announced by All-State Welding Alloys Co., Inc., 249-55 Ferris Ave., White Plains, N. Y. This new electrode may be applied with ac or dc welders, and is designed for work on cast-iron parts such as gears, motor-housings, machine bases, cams, levers, and heavy machinery castings. Tensile strength of the deposit is 60,000 psi.

The All-State No. 6 electrode is available in 3/32, 1/8, and 5/32-inch core sizes in standard packages of 50 pounds.

For further information write to the company, or use the Request Card at page 18. Circle No. 438.

## AISC Announces Changes In Engineering Department

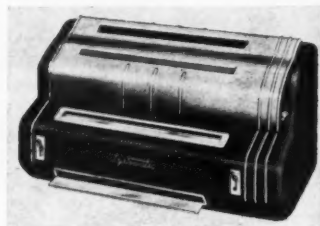
The American Institute of Steel Construction, which has expanded its engineering department to provide greater assistance to consulting engineers and others utilizing its technical research activities, now has each of its 18 district and field engineers reporting to one of five regional engineers.

These regional offices are supervised by Mace H. Bell, the new chief of district engineers. T. R. Higgins, director of engineering since 1945, is now director of engineering and research. He is assisted by E. W. Gradt, former district engineer in Syracuse, N. Y.

The five regional engineers and their offices are C. M. Corbit, Los Angeles; R. B. Reilly, Dallas; H. J. Stetina, Philadelphia; A. L. Small, Chicago, and A. R. Wright, Atlanta.

## Photocopying Machine Is Simple to Operate

A new electric photocopying machine, the Auto-Stat, features instant and automatic developing and fixing. According to the manufacturer, users of the Auto-Stat can peel off permanent dry copies in a matter of



seconds. No dark room is required, nor is any special skill needed to operate the machine.

The unit is designed to handle letter and legal-size copies as well as larger copies up to 11 x 17 inches. It is claimed that an inexperienced operator can produce a minimum of 100 copies per hour.

For further information write to the American Photocopy Equipment Co., Clark St., Chicago 14, Ill., or use the Request Card at page 18. Circle No. 474.

# Resists Shock !



Are the bearing units in your equipment subjected to heavy shock loads? Then, switch now to Sinclair HEAVY DUTY BEARING GREASE for better lubrication, longer bearing life. This *extreme pressure* grease is specially compounded for severe service lubrication in construction, mining and quarrying equipment.

Tests prove Sinclair HEAVY DUTY BEARING GREASE *resists shock loads, water, heat, throw-off, and squeeze out*. Try it—for longer bearing life... higher productivity... lower operating costs.

A Sinclair Lubrication Engineer can give you expert counsel on how to get the most out of your equipment with Sinclair HEAVY DUTY BEARING GREASE. Phone your local Sinclair Representative or write Sinclair Refining Company, 600 Fifth Avenue, New York 20, N. Y. *There's no obligation.*

# SINCLAIR

## HEAVY DUTY BEARING GREASE





Mounted on a truck, the new Pelican hoisting machine becomes a mobile materials elevator with a high reach.

### Mobile and Self-Erecting Materials Tower Hoist

■ A new hoisting tower machine is designed for mounting on the contractor's own "retired" truck so that it can be driven to the job site. The Buck Pelican tower hoist is self-erecting to a 40-foot unloading height. It erects itself completely set up in only 23 minutes. Additional 5 and 10-foot sections can be added as needed.

The machine will raise a maximum of 2,000 pounds. In lowering, the steel tower folds like a jackknife for easy transport.

The Pelican hoist is available in models powered by 12 and 21-hp air-cooled Wisconsin gasoline engines. An added feature is that the platform is removable and may be replaced with a self-dumping concrete bucket, available optionally. A Chicago boom for mounting on the platform is also offered as an accessory item.

For further information write to Buck Equipment Co., 208 Butler St., Cincinnati, Ohio, or use the Request Card at page 18. Circle No. 440.

### Spur-Gear Hoist Bulletin

■ The entire YC and YCT lines of Coffing spur-gear hoists are illustrated in a new bulletin available on request. The lines include a total of 62 different sizes and models with capacities ranging from 1/4 to 25 tons.

In addition to standard single and multiple-chain units, models for specialized applications are shown. Among these are the Army type, low-headroom, clevis-connected, and extended-handwheel hoists. Various types of trolleys, both plain and geared, are also illustrated.

To obtain Bulletin YC-YCT write to Coffing Hoist Co., Danville, Ill., or use the Request Card at page 18. Circle No. 494.

### Austin Division Assigns Crowley to Sales Region

M. B. Crowley has been appointed eastern regional sales manager of the Austin Division of Central Ohio Steel Products Co., Galion, Ohio.

Responsible for the sales development of Austin Overshot loaders in the states east of the Mississippi River, he will make his headquarters at Galion.

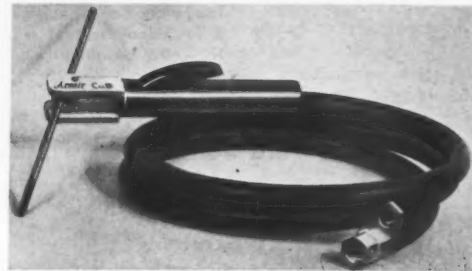
### Syntron Appoints Two

The Syntron Chicago Sales Co., representing the Syntron Co. of Homer City, Pa., has appointed Henry A. Fleer, Gilbert Hilbrant, and R. B. Dietsche to the Chicago sales staff. They will handle sales and accounts of Syntron vibratory handling equipment in the Chicago territory.

Henry L. Wolfe will work from the Syntron Baltimore Sales Co., but with headquarters in Richmond, Va.

William S. Stephens has joined the material-handling department of the company as application engineer. From the firm's headquarters in Homer City, he will recommend applications of the proper Syntron electric bin vibrators, Vibra-Flow vibratory feeders, grizzlies, and screens for various work.

The Arcair metal-cutting torch.



### Metal-Cutting Torch in Light-Duty Model

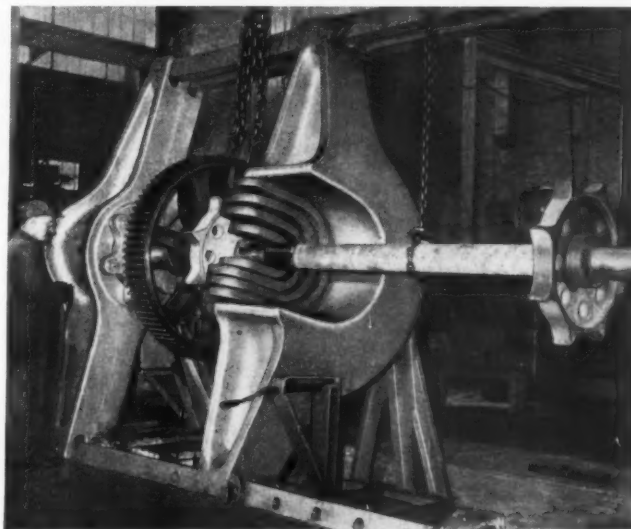
■ A small cutting and gouging torch that uses electrodes up to 1/4 inch in diameter has been added to the Arcair line. As with all Arcair torches, the new Model G-2 operates from an ordinary dc welding machine and a compressed-air line. The torch removes defects in castings or forgings,

cleans the roots of welds, and removes welds. It also grooves, bevels, or cuts mild steel, stainless steel, hard alloys, brass, bronze, Monel, and cast iron.

For further information write to Arcair Co., 423 S. Mt. Pleasant Ave., Lancaster, Ohio, or use the Request Card at page 18. Circle No. 413.

# A MOUNTAIN *of* POWER

## —or a touch of pressure



POWER FOR BIG JOBS—This Rodgers 600-Ton Inclined Forcing Press is forcing a large gear and sprocket from a mine machine shaft.

The heavy machines and equipment used in the great iron mining industry present a variety of problems when repair or maintenance is necessary. For this work the accurately controlled action of Rodgers Hydraulic Forcing Presses is a real time and work saver.

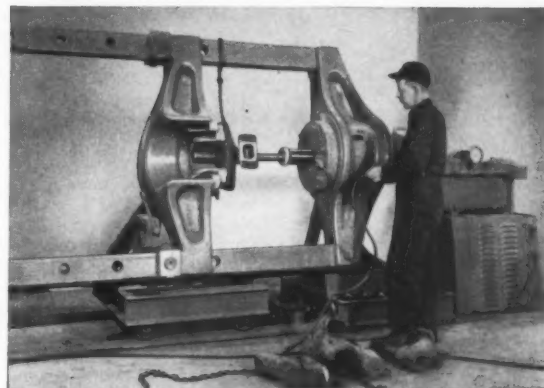
A Rodgers Forcing Press puts a mountain of power at your fingertips to force wheels, sprockets or gears from their shafts and for straightening, assembling, swedging or upsetting jobs. Operators also use the versatility, speed, power and positive control of a Rodgers Forcing Press to efficiently perform small pressing and forcing jobs with just a touch of pressure—tasks once done only on vertical shop presses!

## you get both with RODGERS FORCING PRESSES

Rodgers vertical, horizontal and inclined forcing presses offer capacities from 100 to 600 tons . . . up to 9 feet between tension bars . . . up to 16 feet between ram and abutment . . . single or double acting cylinders with 13 or 26-inch ram travel (72-inch travel available) . . . electrically powered hydraulic pumps with selective, positive pressure adjustment and remote control . . . removable press cylinders that can be used in special jacking or pulling jobs . . . and many more features that assure you of dependable, long life operation—all fully described in this Rodgers Catalog Number 315A.



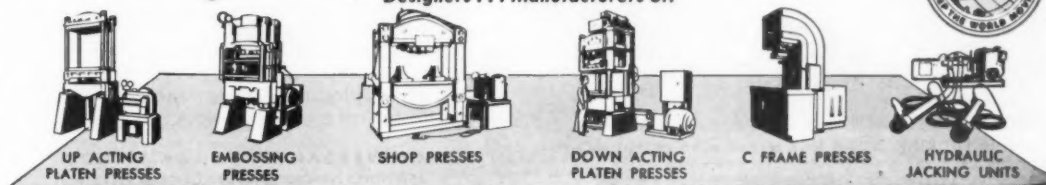
Write for it today!



LIGHT TOUCH FOR SMALL JOBS—This Rodgers 300-Ton Inclined Forcing Press is used on small as well as large equipment repairs. Here, a pin is being pressed out of a tractor idler support bracket.

**Rodgers Hydraulic Inc.** 7415 Walker Street, Minneapolis 16, Minn.

Designers . . . Manufacturers of:



Top payload of the new LeTourneau-Westinghouse Model B Tournapull scraper is 23 yards, measured heaped. The unit is powered by a 293-hp diesel engine.

## New 23-Yard Self-Propelled Scraper Powered For Easy Loading and High Hauling Speeds

■ The LeTourneau-Westinghouse Co. has announced the first earthmoving machine completely designed and built by the new company—the B Tournapull, a 23-yard single-engine, self-propelled scraper. The giant unit has a struck capacity of 18 yards and a heaped capacity of 23 yards without sideboards. Its over-all length is 40 feet 6 inches; its width, 11 feet 8 inches; and its height, 12 feet 7

inches. Despite its size, the B Tournapull can turn around nonstop in a space 35 feet wide.

Powered by either a Cummins or General Motors 293-hp diesel engine, the new scraper offers 10 gear ratios ranging from 2.4 to 28.4 mph. This provides a fast top speed for a unit of this size and also allows selection of working speeds best suited to ground conditions. The unit's low gear



matches pusher speed and gives lugging power for pulling through soft ground. With fast shifting ability, the B Tournapull gets into higher hauling speeds quickly. The big rig is

equipped with a large fuel tank that provides a 10-hour supply, which means full-shift operation without refueling.

Interchangeable with the scraper on the B Tournapull is a 35-ton rear-dump wagon body. This unit is rated at 23 yards struck or 27 yards on a 2 to 1 heap without sideboards. Dimensions of the big wide body are 17

## HIGH SPEED CONCRETE FORMING

### Form and Pour 75 ft. diameter tank 26 ft. high in 8 hours!



9:30 am POURING started at 8:00 am. Here is 6 ft of concrete in place.

How a contractor formed and poured a circular tank 75 ft. in diameter with walls 26 ft. high and 14 inches thick in 8 hours, with maximum economy makes the concrete forming speed story of the year.

The tank was formed and poured by the contractor, C. H. Leavell & Co., El Paso, Texas, in record time, and a tough



11:30 am FORMING AND POURING were in full production at the 10-ft level.

forming specification limiting maximum free drop of concrete to 4 ft. was rigidly adhered to.

UNI-FORM Concrete Forms—the prefabricated, ready to use form panels—were used on the job. Because UNI-FORMS



4:00 pm POURING at 22-ft level. Scaffold setters on final placement.

erect into a tight, rigid, automatically accurate form requiring alignment and bracing on 1 side only, the contractor conceived the idea of simultaneously forming and pouring the wall. Universal Form Clamp Co. engineers on the job agreed that the plan was feasible.

Rigidity of the steel-framed, plywood faced UNI-FORMS permitted fast, non-stop erection of the entire inside form. This permitted setting of reinforcing steel, outside forming, and concrete placement to proceed with maximum efficiency, speed and safety. The outside of the tank was formed using 5 lifts of 4 ft. and 2 lifts of 3 ft. UNI-FORM Panels. In this way, the concrete never dropped more than the specified 4 ft. below the height of the outside form.



4:45 pm UNI-FORMS now completed.

As successive pours were completed, the outside form was closed by setting the UNI-FORM Panels in place and locking them to the projecting UNI-FORM Ties. UNI-FORM Circular Wall Fillers, which member with UNI-FORM Panels, permitted forming the curve of the wall to specifications. Automatically accurate wall widths were insured, as the UNI-FORM Ties spread and locked the face of the Panels exactly 14" apart. UNI-FORM Scaffold Brackets, which fasten directly to the steel UNI-FORM frame, provided fast, low cost scaffolding.

The result? Under the capable direction of job superintendent Paul Nigh and project manager N. J. Riebe—fast, low cost forming and pouring—an accurate, smooth faced wall with true curvature.

UNI-FORM Panels are versatile, high speed forming tools. They're used by the country's most successful contractors to form every conceivable type of construction. They are rented or sold... or rented with purchase option. Universal Distributors and Branches are located from Coast-to-coast. Write for UNI-FORM Catalog and complete details on UNI-FORMING—the modern way to form concrete.

UNIVERSAL FORM CLAMP CO.  
1238 North Kostner Avenue • Chicago 51, Illinois



Interchangeable with the scraper on the new B Tournapull is a 35-ton rear-dump wagon that carries 27 yards without sideboards.

feet 8 inches long, 19 feet 2 inches wide, and 7 feet 8 inches deep at maximum depth. The reinforced-steel-plate body raises to vertical position at the touch of a dashboard switch.

LeTourneau-Westinghouse emphasizes that behind the design of the newest Tournapull there are 36 years of scraper-building experience. The company points to such features as the easy loading characteristics of the new scraper, and the operating advantages of the deflector plate, high apron lift, wheels inside the cutting edge of the scraper, and power steering.

The machine's design has also taken into account the importance of easy maintenance. With good accessibility and easy replacement of component assemblies, the task of keep the unit in shape has been simplified. All major assemblies such as transmission, clutch, final drive, and differential can be lifted from the machine without the necessity of time-consuming handling of other components. All electric motors, including the starting motor, are out in the open for easy adjustment when necessary.

The electric controls, fundamental to the operation of all LeTourneau-Westinghouse construction equipment, provide instant response. The quick release on the scraper allows gravity drop of the bowl, with the machine's electric controls always available for hoisting. This feature, it



is pointed out, allows the operator to pump loads to work more effectively in sand and other loose materials. Pumping also helps keep material boiling for big loads. Other aids to achieving boiling action while loading are the deflector plate at the rear of the bowl and the scraper's curved apron which, incidentally, lifts 6 feet 6 inches to permit free ejection of material.

Another of the important features of the B Tournapull is that its blade is correctly angled for the most efficient cutting action. The push block is newly designed to connect with the scraper bottom as well as the side sheets. This gives direct action and makes use of the full power of the push tractor. Because the push block is low, it directs the push tractor's thrust straight to the blade. The block is rigidly reinforced for maximum strength.

Weight distribution on the B Tournapull puts 56 per cent of the loaded-scraper weight on the drive wheels. In addition, the unit's new feather touch power-steering wheel gives the operator the feel of the road and its power-transfer differential keeps power flow equal and constant to both drive wheels. These characteristics keep the machine going right on through soggy cuts and soft fills.

Large 30-ply tires, 27 x 33 in size provide ample load-carrying capacity. Big four-wheel air brakes and a positive parking brake contribute to safety in operation.

For further information write to LeTourneau-Westinghouse Co., Peoria, Ill., or use the Request Card at page 18. Circle No. 462.

### Manager Is Assigned To Gar Wood Branch

A. F. Hoop, a veteran Gar Wood employee, has been appointed manager of the Los Angeles direct factory truck-equipment sales branch of Gar Wood Industries, Inc., of Wayne, Mich.

The Los Angeles branch markets several types of special equipment.

## You SET THE SPECIFICATIONS...



Special 4x6 Steam Fixed Drum Winch. Duty single line pull 4,300 lbs. at 90 FPM.

Superior-Lidgerwood-Mundy has the facilities and experience to meet them... either from an all-inclusive line of standard hoisting equipment or with equipment engineered to your specific requirements.

WRITE FOR BULLETINS AND CATALOGS

### SUPERIOR LIDGERWOOD MUNDY CORPORATION

Main Office and Works: SUPERIOR, WISCONSIN, U. S. A.  
New York Office, 7 Day Street, New York 7, N. Y.

### Grout and Mortar In Premixed Form

■ Non-shrink Embeco, for more than 30 years a product of The Master Builders Co., is being made available in ready-to-use form for the first time. It has been placed on the market as premixed mortar and grout.

The manufacturer emphasizes that the premixed mortar and grout are superior to plain sand-cement prepared mixes because they do not shrink upon hardening. Other advantages include higher compressive and impact-resistant strength, ductility or toughness, oil and water resistance, and fast hardening.

Embeco premixed mortar is used for such jobs as patching concrete floors and steps, repairing wall seams and cracks, grouting around pipes through walls, and for a variety of



This large concrete pipeline is being installed with non-shrink Embeco premixed mortar joints. According to the manufacturer, this mortar produces a joint more watertight than the pipe itself and aids in controlling infiltration and root penetration.

other uses. The premixed grout is used for grouting building columns, anchor bolts, and machinery.

For further information write to The Master Builders Co., 7016 Euclid Ave., Cleveland 3, Ohio, or use the Request Card at page 18. Circle No. 456.

### Timken Roller Bearing Makes Two Assignments

D. G. Gibson has been appointed district manager of the Dallas territory by Timken Roller Bearing Co., Canton, Ohio. Formerly assistant district manager, Mr. Gibson succeeds the late Harry W. Trump. He has been with Timken since 1938.

After completing the company's industrial sales training program, Frank G. Siler has been assigned to the post of field engineer in the Moline office.



Model C-250  
25 H. P. Optional  
Self-Propelled.  
A Clipper Model  
to fit Every Budget  
Priced from \$395



### Clipper BLADES

For Best Results

#### • CLIPPER "GREENCON"

Savings you never dreamed of—up to 80%! The original Reinforced Abrasive Blade that knives through green concrete with aggregate of limestone, coral, or steel mill slag. "Try them on your next job."

#### • CLIPPER DIAMOND

A Blade for any job—any aggregate—every saw! Choose your Clipper Diamond Blades from a wide variety of specifications to cut green or old concrete with outstanding speed and economy.

By the Makers of Clipper Masonry Saws



KANSAS CITY, MO.

Genuine Clipper Products Are Sold Only Direct. Immediate Shipment from Factory Branches in Principal Cities, Coast to Coast. Mail Coupon for Same-Day Service.



Better Mail the Coupon NOW!

## NOW-SEE WHY You Cut More Concrete

with **Clipper** CONCRETE SAWS

### --LOOK INSIDE

Behind Engine...  
Under Frame...  
for Famous...

CLIPPER QUALITY plus 5 of the EXCLUSIVE FEATURES

THAT GIVE YOU LOWEST CUTTING COST PER FOOT!

ASK FOR FREE DEMONSTRATION ON YOUR JOB

### LOOK AT THESE 5 FEATURES

- 1 4 Wheels with 3-Point No-Bind Blade Suspension
- 2 Self-Propelled with Abrasive-Coated Drive Wheels
- 3 Positive Screw Feed
- 4 Patented Water Application
- 5 Dashboard Controls

Send Coupon for the Whole Story

#### CLIPPER MANUFACTURING CO.

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☐ I want a FREE DEMONSTRATION of a Clipper Concrete Saw.

☐ Send FREE Literature on Clipper Concrete Saws and Blades.

☐ Send FREE Literature on Clipper Masonry Saws and Blades.

☐ Have a Clipper representative call on me.

Name

Address

City

State

# Long trestle carries railroad over floodway

**Steel pier and deck forms, prefabricated reinforcing speed construction of 7,500-foot-long concrete bridge**

The newest high-level crossing of the West Atchafalaya Floodway in the lower Mississippi Valley is the 7,500-foot-long Missouri Pacific railway bridge, composed of three reinforced-concrete trestles 1,000, 2,500, and 4,000 feet long. Like the several high-level highway and railroad crossings of the Morganza and West Atchafalaya Floodways, the structure has a roadbed sufficiently above flood level so that it can be used constantly, yet permit the passage of flood waters.

The joint-venture firms of T. L. James & Co., Inc., Ruston, La., and J. E. Walters Contracting Co., Tyler, Texas, completed work on the structure last year under a \$2,157,000 contract from the New Orleans, Texas, and Mexico Railroad, a subsidiary of the Missouri Pacific. Construction of earth embankments on sections of the project lying between the bridges was started soon afterward by Texas Construction Co., New Orleans, La. The railroad is being reimbursed for

the cost of the project by the federal government through the U. S. Army Corps of Engineers, since the project is considered part of the floodway construction program.

This program has the West Atchafalaya Floodway serving as an emergency diversion channel. Water from the Mississippi can be diverted directly into Lake Ponchartrain by the Bonnet Carre Spillway, just above New Orleans. The Morganza control structure, further upstream, permits water to be diverted into the Atchafalaya Basin. If diversions through both these facilities are insufficient to keep the waters of the Mississippi within the safe capacity of the channel, the West Atchafalaya Floodway is used to lead flood waters directly to the Gulf of Mexico.

The first job in bridging the floodway started in 1953, when the area was cleared of a dense growth of hardwood timber and brush. Large trees were felled with Poulan chain saws, and brush and smaller timber

A Bucyrus-Erie 54-B crane, working from a temporary work bridge which runs parallel to the trestle location, sets a 10-inch Jaeger pump on the corner of a long cofferdam for dewatering the structure.

C&E Staff Photos



were cleared by Caterpillar D8 and Allis-Chalmers HD-19 tractors equipped with dozers. Brush and trimmings were stacked and burned on the right-of-way.

## Footings

In places where the bridge would not span open water, a continuous trench, wide enough for the footings, was dug to grade by a Koehring 804 dragline with 2-yard Hendrix bucket. Where the bridge had to cross bayous, cofferdams were driven and foot-

ings constructed inside. The average depth of the footing trench was about 12 feet. Some of the excavated material was used to build a service road along one side of the trench, and the balance was stockpiled on the other side for backfill.

After footing trenches had been dewatered by a 10-inch Jaeger pump, 3 and 6-inch pumps distributed along the job held the water level down. For a typical intermediate bent, 24 untreated timber piles of pine and cypress—supplied by W. T. Ferguson

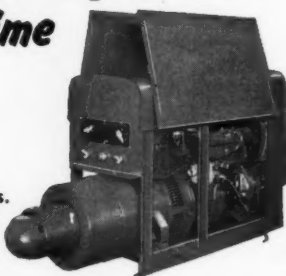


## A Lincoln speeds repairs... to cut costly downtime

Contractors count on Lincoln "Shield-Arcs" to keep equipment operating . . . at a profit. They choose Lincolns because:

1. "Shield-Arcs" are reliable.
2. "Shield-Arcs" make good welds.
3. Operators like "Shield-Arcs".

Write for Bulletin 1337 on Lincoln "Shield-Arc" DC Engine-Driven Welders.



**THE LINCOLN ELECTRIC COMPANY**

Dept. 5301 • Cleveland 17, Ohio

THE WORLD'S LARGEST MANUFACTURER OF ARC WELDING EQUIPMENT

## ALL PITS ARE DIFFERENT....



3-cu. yd. rapid shifter

## THAT'S WHY SAUERMAN SCRAPER MACHINES ARE JOB-ENGINEERED FOR YOUR PLANT

Your deposit may require a manually-shifted tail and bridle system or it may need a rapid shifter to make the many moves necessary in shallow pit operation or handling of non-caving material. If large capacities and long hauls are involved a Sauerman Track Cable machine may best suit your needs. In the latter arrangement, the scraper bucket is attached by chains to a carrier traveling on a track cable. The bucket conveys its load at ground level and is discharged at the dumping point by merely tightening the track cable. Bucket and carrier glide back to the digging point at high speed when brake is released.

Sauerman scrapers work equally well on hills, boggy ground or in deep water. One man controls digging, hauling and dumping from a safe location, which may be as much as 1,000 ft. from the deposit. Sauerman machines cost less than any other types of excavators of similar capacities. Operating costs are very low, because you eliminate the power cost involved in moving heavy machinery around the area. A drag scraper maintains its efficiency for many years. When parts are replaced—sheaves, clutch or brake linings—the machine is restored to practically new condition, even though it may be twenty or more years old.

Write to Sauerman's experienced engineers about your plant

They will give you specific recommendations without obligation. Request Catalog A, Drag Scrapers—24 pages of job photos and specifications.

**SAUERMAN BROS. INC.**

616 S. 28th AVE.,

BELLWOOD, ILL.

CONTRACTORS AND ENGINEERS





Workmen assemble steel pier forms over the reinforcing steel cages. After being plumbed and aligned, the column forms are braced with guy cables tied to adjacent footings.



A Manitowoc 3500 crane walks a section of steel deck form to a new location. Deck sections are 31 feet 3 inches long, almost 16 feet wide, and more than 5 feet deep.

Lumber Co., St. Louis, Mo.—provided the foundation. A Vulcan 50C hammer, operating in 96-foot job-made leads and handled by a Bucyrus-Erie 54-B crane, drove eight 60-foot piles at a batter and sixteen 50-foot vertical piles for each footing.

Brace bents were constructed at each side of each bayou and at each end of the three separate structures which make up the project. Footings for the brace bents were each founded on eight Monotube steel piles, 110 feet long, supplied by Union Metal

Mfg. Co., Canton, Ohio. After a 75-foot section of the Monotubes had been driven, a 35-foot section was welded to it and the pile was driven the balance of the way. The rig which drove the piles also did this job.

Sheet pile cofferdams were constructed completely across two small bayous having very little flow of water. In the third and larger bayou, one large cofferdam measuring 37 feet wide and 150 feet long was built out from one bank. In this cofferdam, footings for five bents were con-

structed. Independent cofferdams were built for the remaining seven piers in this bayou. All these cofferdams were dewatered by the same 10-inch Jaeger pump used in the trench excavations. Cranes and other equipment operated from a temporary timber trestle paralleling the new bridge.

#### Use Steel Forms

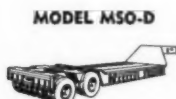
Prefabricated steel forms were used for pier footings, piers, and deck. Footings for normal bents were

H-shaped and measured 18×19 feet over-all. Columns, 27×42 inches at the bottom, tapered to 27 inches square at the top. Pier caps measured 3 feet wide, 4 feet deep, and 12 feet long. Forms for six pier footings were usually set up for pours at one time.

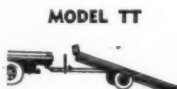
When the footings had been placed and cured and the forms stripped, prefabricated cages of reinforcing steel for the columns were set up on the footings and tied to the dowels. Steel forms for the columns and caps were then set over the reinforce-



Jack over axle models. Capacities 11 through 25 tons.

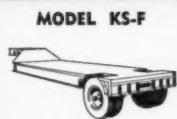


Multiple axle drop bed semi, capacities 35 through 75 tons. Drop deck or flat deck.

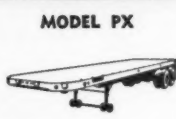


Heavy-duty tilt trailer. Capacities 6, 8 and 10 tons.

### ...A TRANSPORT FOR EVERY NEED!



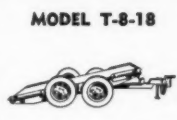
Single axle flat bed semi, capacities 10 through 20 tons. Drop deck or flat deck.



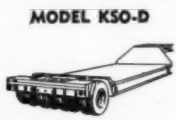
Heavy-duty tandem axle, spring mounted platform or float.



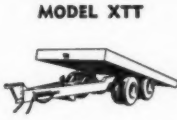
Single axle, spring mounted platform or float.



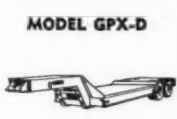
14 or 18 foot length between the wheel tilt trailers. 8-10 ton capacity.



Dual axle drop bed semi, capacities 15 through 30 tons. Drop deck or flat deck.



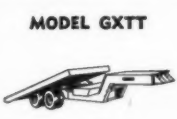
Tandem axle tilt trailer (tow type), capacities 13 through 20 tons.



Tandem axle. Capacities 16 through 35 tons. Drop deck or flat deck.



Single or tandem axle models. Standard capacities 8 through 15 yards.



Gooseneck type, tandem axle tilt-trailer. Capacities 14 through 22 tons.



WRITE FOR FREE CATALOG OF COMPLETE LINE

CONVERTER FRONT DOLLIES AVAILABLE FOR SEMIS  
"TRANSPORTATION ENGINEERING A SPECIALTY"



CEDAR RAPIDS

IOWA, U.S.A.

## Reciprocating Plate Feeders Built into Kolman Portable Loading Traps



50' x 36" KOLMAN Portable Conveyor-Screen Plant owned by Peter Kiewit Sons' Co., equipped with built-in feeder and wing walls.



COMPLETELY PORTABLE  
CONVEYOR-SCREEN PLANT  
CONVEYOR • SCREEN • TRAP • FEEDER

Now you can handle rough, rocky, abrasive material without fear of belt damage—you can be sure of a constant, regulated flow of material—you can enjoy all of the advantages of a feeder on a completely portable plant!

With the "built in" feeder, both loading trap and plate feeder are designed as an integral part of the portable conveyor. The trap provides a complete cover for all working parts and is large enough to permit a man to enter on either side to service and adjust the feeder and conveyor tail section. The feeder is controlled by adjusting the length of stroke and the angle of operation.

This new Portable Feeder-Trap Combination is now available on all Model 101 Heavy Duty KOLMAN Portable Conveyors. Loss of time in setting up, taking down, and moving a separate feeder and hopper is eliminated entirely. Your portable plant is ready for operation as soon as it reaches a new job.

#### Steel Wing Walls Also Portable

The Portable Trap can also be equipped with steel Wing Walls extending forward and up beyond the regular loading trap walls. This additional enclosure prevents loose gravel, earth or other material from working into the conveyor tail section and

eliminates the need for building awkward walls of timbers and planks. The wing walls are permanently mounted and portable with the rest of the plant.

The Feeder-Trap Combination makes it possible to use the KOLMAN Portable Conveyor-Screen Plant with virtually any type of feeding device including bulldozer, shovel, dragline or front-end loader. Available with either single, double or triple-deck vibrating screen, it is a versatile plant for high production screening, too!

#### SEND for FREE literature

KOLMAN Manufacturing Co.

4922 West 12th St., Sioux Falls, S. D.

Send literature on:

Conveyors ☐

Screens ☐

Feeders ☐

Quote ..... size or ..... capacity.

Name .....

Address .....

City .....



Water level in a trench for pier footings is held down by a Carver 6-inch pump at the edge of the excavation. The concrete footings are cured by sprays of water, supplied at 65 pounds pressure, from perforated pipes and lawn sprinklers.

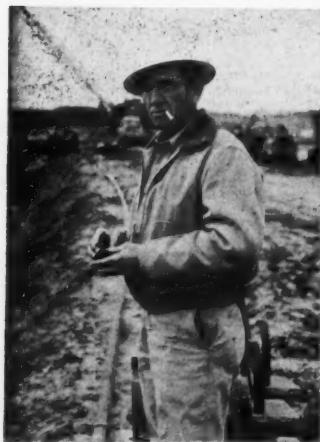
C&E Staff Photos

ing steel cages, plumbed, aligned, and braced with cables tied down to the adjacent footings. Columns and caps were placed as a unit.

The entire deck section for each span was cast in a prefabricated steel form. The weight of the form, reinforced steel, and concrete was carried on two heavy-section H-beams, making falsework unnecessary. The deck section measured almost 16 feet across and had a span of 31 feet 3 inches. The two girders measured 2 feet 6 inches wide by 3 feet 1 inch deep. The complete form for a deck section weighed 28,000 pounds and required 39½ cubic yards of concrete. A Manitowoc 3500 crane erected and stripped these forms, which were attached to each end of the two supporting H-beams.

Deck forms were supported on four needle beams, one in each corner of the falsework. These beams rested on needle plates on top of the piers and overhung the opposite sides of the piers. From the outer ends of the beams 1½-inch tie rods fitted with turnbuckles were connected to hairpin bars which has been cast into the footings. As the turnbuckles were tightened, these rods pulled down on the outer ends of the needle beams and raised the forms to grade. When concrete had been placed and cured, the turnbuckles were loosened, permitting the form to drop away from the concrete.

The steel forms used on this project, originally built in 1941 for Brown



W. L. Gasaway is project superintendent for T. L. James & Co., Inc., and J. E. Walters Contracting Co., joint-venture contractors on the trestle project.

& Root, Inc., Austin, Texas, for use on the 19,000-foot Missouri Pacific crossing of the Morganza Floodway, were later used for the Texas Pacific span across the same floodway. The present job brought the length of trestle built with these forms over a 13-year period to 40,000 feet.

All reinforcing steel for a deck span was prefabricated into a unit. Bars were tied and welded together to form a rigid cage which could be handled by a crane. A special bridle with four-point suspension enabled the crane to pick up the entire cage without straining or distorting it. A Ford truck equipped with a large flat-bed trailer transported the cages to various sites, where they were placed by the Manitowoc 3500 crane which set the deck forms. Bearings were supplied by Bethlehem Steel Co., Beaumont, Texas, and reinforcing

steel, furnished by Laclede Steel Co., Inc., St. Louis, Mo., was delivered to the job by barge. Barges traveled from St. Louis down the Mississippi, through the Intracoastal Canal to the Atchafalaya River, and thence to the job site.

#### Pavers Mix Concrete

Although the three structures which make up this project are separated by several miles of earth embankments, all concrete was batched from the same plant. Aggregates from the Holloway Gravel Co., Inc., Baton Rouge, La., were delivered by rail. A Lima Paymaster crane with ¾-yard clamshell bucket unloaded the cars and charged the bins. Bulk cement was delivered by rail from the Ideal Cement Co., Baton Rouge, La., and was batched directly from the cars.

## 21-SECOND batch time

speeds airport and highway paving one

Johnson Automatic Batch Plants, like the one shown here, accurately weigh out aggregates and cement ahead of heaviest paving schedules on highways, airports, and other large-volume concrete jobs. For example:

**Keeps two 34-E pavers busy . . .** One plant, with one batcher operator, easily supplies enough materials to keep two 34-E pavers busy full time. A 1¼-cu. yd. batch is weighed up, and discharged into truck, in as little as 21 seconds. One-stop charging of batch trucks speeds production. (Plant also can be arranged for two-stop charging.)

**Automatic control** maintains high plant output all day . . . assures pin-point weighing accuracy of every batch. A separate, fully-automatic weigh-batcher is used for each of the aggregates, and for the cement. All materials weigh up at the same time for greatest speed. These single-material Johnson batchers operate on electro-pneumatic control . . . fill valves and discharge gates are automatic air-ram operated.

**Multiple batch selections . . .** For road-builder's use, dial scale with electric cut-off switch is usually used. When more than one batch size is required, single material batchers can be equipped with mix selector for 12 different mixes . . . all controlled from central operator's station. (Each of the single-material aggregate batchers can be equipped with a moisture compensating lever which automatically gives a dry weight of material being weighed.) Up to 120 mix selections are available on large Johnson batch plants for dams, and commercial ready-mix installations.

Investigate the possibilities of increasing concrete production on your operations with one of these Johnson Automatic Batch Plants. In many instances this equipment can be added to an existing plant. For complete details, contact your Johnson distributor, or write to us.

**C. S. JOHNSON COMPANY**

CHAMPAIGN, ILL.

(Kochling Subsidiary)



**JOHNSON automatic BATCH PLANTS**

CONTRACTORS AND ENGINEERS



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At the batch plant, trucks drove under a specially built platform to be loaded. Measured batches of cement were wheeled from the car in Konekarts. Batches were dumped into the trucks through holes in the platform. One-yard batches were hauled to two Koehring 27E pavers, which mixed the concrete adjacent to the section being placed. Booms and buckets had been removed from the pavers, and the concrete was discharged directly into 1-yard Johnson bottom-dump buckets. Two cranes, a Northwest No. 8 and a Lima 604, hoisted the buckets to the forms. Chicago Pneumatic electric vibrators powered by Homelite generators vibrated the mix as it was placed.

Water for mixing and curing concrete was pumped from nearby borrow pits through a 2½-inch main which ran the entire length of the



Sections of the deck are cast in this steel deck form, shown here with one end removed.

structure. Pressure, maintained at 90 pounds at the pump, provided a minimum of 65 pounds at the end of the line. Convenient hose connections made it easy for the mixers to obtain water at any point along the structure. Curing was done with rotating lawn sprinklers and perforated pipes, both fed through garden hoses from the same main.

After the forms had been removed, all inside and outside vertical faces above grade and the exposed top faces were given a rubbed finish by hand with burlap and mortar. The metal forms appeared to give a satisfactory outside finish which required little or no touching up.

#### Personnel

Project manager for the joint venture of T. L. James & Co., Inc., and J. E. Walters Contracting Co. was J. E. Walters. Job superintendent was W. L. Gasaway, and master mechanic, W. R. Sanders. Supervision for the Missouri Pacific Railroad was handled by resident engineer Clarence Baker. **THE END**

## ving one-man operation



### 25-foot-per-minute Parsons 150 Trenchliner®

On drainage, irrigation and utility trenching, 150 wheel-type Trenchliner digs 16 to 26 inches wide, at depths to 5¾ feet. Hydraulic wheel-hoist maintains close grade tolerance. 30 digging feeds range from 12 inches to 25 feet per minute. Has square or round-bottom buckets; gumbo lips or "Tap-In" teeth; 16 or 12-inch crawlers; gas or diesel power. Tile box and chute optional. Parsons line includes 5 other models, all sizes and types.

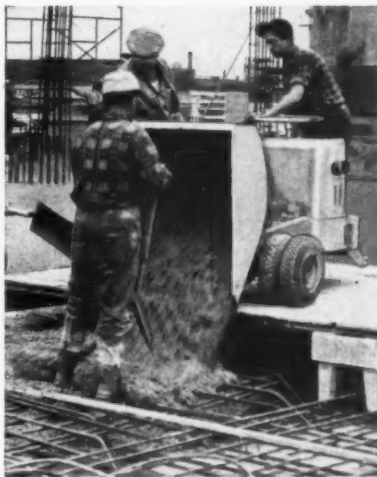
PARSONS • Newton, Iowa  
(Koehring Subsidiary)



### Kwik-Mix Moto-Bug® has ¾-ton capacity

Moto-Bug power wheelbarrow hauls 10 cu. ft. (or 1500 lbs.) of any bulk materials. Has instant gravity-dump, with snub-line control. Climbs 20% ramps or grades. There's full power forward and reverse ... and safe, automatic brake control. Hopper is interchangeable with 1500-lb. platform, or ½-ton (6-ft.) fork lift. For your heavier work, a larger size Moto-Bug is also available with big-capacity hopper, platform and fork lift.

KWIK-MIX • Milwaukee, Wis.  
(Koehring Subsidiary)



### Save turn-time with Koehring Dumptor®

Fast-shuttling Koehring Dumptor® eliminates slow turns at loader, on narrow haul roads, and at the dumping location. With constant-mesh transmission, Dumptor travels same speeds forward and reverse ... gets its load, drives to fill, dumps and returns to loading unit without turning. Eliminating only 2 turns saves ½ minute on every cycle. Instant gravity dump cuts another 15 to 25 seconds off haul cycles with heavy-duty Dumptors.

KOEHRING Company  
Milwaukee 16, Wis.



### Caterpillar Issues Book On Crawler Tractor

Photographs—some of them 60 years old—profusely illustrate "50 Years on Tracks," a 104-page hard-bound book tracing the development of the crawler tractor. Published by Caterpillar Tractor Co., Peoria, Ill., the book was issued as part of the company's commemorative program last year celebrating the 50th anniversary of the crawler tractor.

The book is made up of chronological essays, which deal first with the combines and tractors that were in use prior to the manufacture of the first crawler unit in 1904. The growth of agricultural, logging, and oil industry markets is also detailed in the book. The last section presents a picture of the company and its operations at the present time. Copies may be purchased from Caterpillar dealers throughout the country for approximately \$1.25.

### Book Treats Chemistry Of Portland Cement

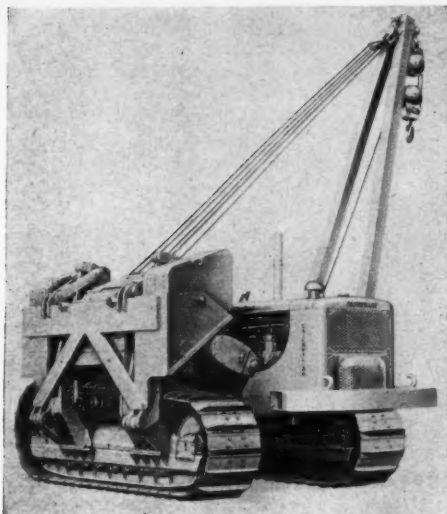
A second edition of "The Chemistry of Portland Cement," published by Reinhold Publishing Corp., contains the latest information on techniques for studying the atomic structure of cement compounds, techniques for examining the morphology of materials, and the results of latest crystal structure studies on both anhydrous compounds and the hydrated materials in cement pastes.

Written primarily for the cement chemist, the book deals not only with the chemistry of portland cement, but also with the history of the cement industry and the manufacture of portland cement. The book is limited to cements of the portland class, and routine chemical or physical methods of test, which are readily available from other sources, are not included.

The book is divided into three parts, which cover the chemistry of clinker formation, the equilibria of clinker components, and the chemistry of element utilization. Appendixes, an author index, and a subject index are included in the 793-page book. Copies, at \$16.50 each, may be ordered from the publisher, 430 Park Ave., New York 22, N. Y.

Many units in this Johnson Automatic Batch Plant consist of: 150-cu. yd. storage bin, with 3 aggregate compartments, and a 150-bbl. central cement compartment. Three 2000-lb. automatic single-material aggregate batchers ... one 1000-lb. automatic cement batcher ... truck-receiving hopper, bucket elevator and 757-bbl. aerated silo for cement. Slide ramp permits convenient truck delivery of aggregates to top of bin.

BINS • BATCHERS • HOPPERS  
ELEVATORS • CHARGERS  
CLAMHELL, CONCRETE-BUCKETS



The Caterpillar No. 583 pipelayer, a new 39-ton machine, has a lifting capacity of 130,000 pounds.

On its first field test, the No. 583 pipelayer was put to work on the heaviest tasks of a 30-inch pipeline job. The machine lowered-in pipe at the rate of 2 miles a day. On level ground it continually supported an estimated 700 to 800 feet of pipe.



## Pipeline Industry Gets High-Capacity Equipment

### In New Pipelayer and Twin-Generator Welder

■ The Caterpillar Tractor Co., at the recent Pipe Line Contractors Association Convention at Los Angeles, announced two pieces of advanced equipment for pipeline construction, a powerful new pipelayer and a 300-amp welder with twin generators driven by a single diesel engine.

After five years of research and testing, Caterpillar presented its new No. 583 pipelayer, a machine with a lifting capacity of 130,000 pounds. With the entire machine designed from the ground up as a single pipe-laying unit consisting of both tractor and integral boom, Caterpillar points to a number of operating advantages not found in previous machines. In addition to its exceptionally high lifting capacity, the No. 583 has been designed with a 21-inch ground clearance, the highest in the field.

To power the 39-ton pipelayer, Caterpillar installed a new 6-cylinder engine delivering 190 horsepower at 1,200 rpm. Power is transmitted by a combination three-stage 5:1 torque converter and a special three-speed transmission. Speeds range from 2.4 mph in low gear to 5.4 mph in high. The No. 583 has a new power takeoff that permits power to be routed directly to the pipelayer master clutch. The pipelayer drive is completely independent of the tractor master clutch and torque converter.

Since stability is a big factor in pipeline work, the new unit was designed with 86-inch gage 28-inch track shoes, a seven-roller track frame, and an over-all length of 211½ inches. Engine and boom are centered and counterweights are split in front of and behind the winch mechanism.

The hydraulically-actuated counterweights pivot at the bottom, giving good side and bottom clearance. They retract over the track for better ground-pressure distribution and narrower over-all width for transporting the unit.

Safety features built into the machine include a positive locking pawl on the boom drum to prevent the boom from being dropped accidentally. An interlock prevents accidental reversal of the boom drum with the pawl engaged. The unit's hydraulic steering boosters have live pump drive direct from the engine.

The new diesel-powered 300-amp welder announced at the same time was developed by Caterpillar in cooperation with the Lincoln Electric Co., Cleveland, Ohio. The Twin arc-welder consists of a Caterpillar D315 engine and two Lincoln 300-amp welding generators in a single frame.

With both generators driven by a

## Jaegers prime faster, pull stronger, pump longer

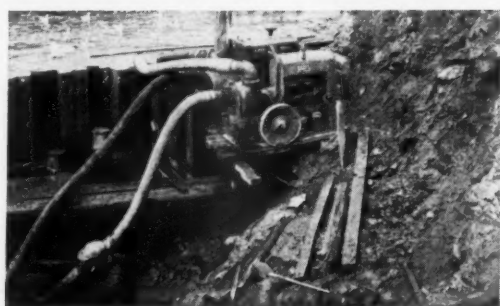


**SLOW PUMP SPEED HANDLES FAST WATER**—Latrobe Construction Co., had to pave the slope of Loyalhanna Creek with 8" thick concrete 25' wide (equivalent to highway slab) when relocating U.S. 30, western Pennsylvania. This Jaeger 6P pump handled 1500 gpm of inflow at a speed of 1450 rpm. Ordinary 6" pumps, with smaller shells and impellers, require up to 1750 or 1800 rpm.



**NEVER RACES TO PRIME**—There's reason why this Jaeger 3P pump is being used to control seepage in this tremie sealed cofferdam on Frederick Snare Co.'s Raritan River Bridge job, N. J. Wherever priming is a problem, Jaeger's combination of inherent and jet priming actions, greater priming water capacity and ability to prime without racing the engine are valuable advantages.

For complete information on Jaeger pumps from 1½" to 10" in size, see your Jaeger distributor or send for Catalog P-4.



**JAEGER PUMPS MAKE WET JOBS DRY**—Two 4" and three 6" Jaegers were used to dewater the main pier cofferdam on this Milwaukee River bridge. Conservatively rated, they have capacity to dewater fast and sure-priming ability to keep jobs dry.



**PUMPS ALL THE WATER A 2" HOSE CAN HANDLE**—This Jaeger hi-performance 2" pump delivers its full rated capacity of 10,000 gph when operating at only 2400 to 2550 rpm (as much as 400 rpm below the speeds of similar ordinary pumps). 28" vacuum at the intake flange is not unusual. Weighs only 180 lbs., measures only 24" x 21" x 26" high, as shown. On base, weighs only 160 lbs.

## THE JAEGER MACHINE COMPANY

701 Dublin Avenue, Columbus 16, Ohio

COMPRESSORS • LOADERS • TRUCK MIXERS • CONCRETE MIXERS • PAVING MACHINES

CONTRACTORS AND ENGINEERS



common shaft, belt maintenance and adjustment are eliminated. Separate control panels and leads allow each generator to be operated as a completely independent unit. A paralleling switch permits the two 300-amp generators to be converted to a single 600-amp unit for applications requiring extra-heavy current.

The engine and generators are mounted on a skid frame 10 feet long and 3½ feet wide. Gross weight of the new unit is about 5,200 pounds.

For further information write to Caterpillar Tractor Co., Peoria 8, Ill., or use the Request Card at page 18. Circle No. 544 for the pipelayer and No. 545 for the welder.

### Soil Mechanics Book For Road Engineers

A comprehensive and up-to-date book on soil mechanics for those engaged in road and airfield construction is "Soil Mechanics for Road Engineers", published by Her Majesty's Stationery Office, London. The book, based on material gathered for lecture courses in soil mechanics held at the Road Research Laboratory, Harmondsworth, Middlesex, England, is supplemented with material gathered in a study of technical literature of other nations. Though some mathematical treatment of underlying theoretical aspects has been included in the volume, the book is essentially practical in detail.

Chapters on compaction and soil stabilization will be of particular value to those engaged in constructing low-cost roads in under-developed areas. Individual chapters deal with the nature of soils, identification and classification tests, chemical tests, roadmaking aggregates, chalk embankments and subgrades, soil survey procedure, and road construction with soil and low-grade aggregates. Soil stabilization by mechanical means, with cement, and with bituminous and resinous materials are also treated in separate chapters. Other subjects covered include soil moisture, subsoil drainage, frost damage, pavement design, construction in swampy grounds, stability of clay slopes, and embankment settlement. The 541-page book, which is the first of a three-volume edition to replace "Soils, Concrete, and Bituminous Materials", published in 1945, is generously illustrated with figures and photographs. Copies of "Soil Mechanics for Road Engineers" may be ordered directly from Soiltest, Inc., 4520 W. North Ave., Chicago 39, Ill. The cost is \$7 a copy if cash is paid, and \$7.25 if the order is billed.

### Rubber Transmission Belt Made With Improved Cord

A new line of transmission belts has been placed on the market by Goodyear Tire & Rubber Co., Akron 16, Ohio. Made with Goodyear's 3-T cord, the Compass transmission belts are thinner, more flexible, and capable of carrying greater loads than earlier types.

The 3-T cord is the result of a recently developed processing technique for synthetic filaments that stabilizes the wild stretch characteristic of man-made fibers.

For further information write to the company, or use the Request Card at page 18. Circle No. 495.

### Resurfacing Costs Cut With Use of Grid Roller

How Stillwater County, Montana, pared costs on an original 550-mile road-resurfacing estimate from \$2,500 a mile to \$760 per mile is reported in Field Facts No. 36, available from Hyster Co. Because the only gravel pits available were located 60 miles away from the job, it was decided to use the Hyster grid roller to crush material from nearby sandstone and shale deposits.

According to the report, this solution cost the county 38 cents per cubic yard, or \$760 per mile, and included ripping shale and sandstone

in the deposit, hauling, crushing, and compacting to a finish.

To obtain a copy of Field Facts No. 36 write to Hyster Co., 2902 N. E. Clackamas St., Portland 8, Oreg., or use Request Card at page 18. Circle No. 490.

### Catalog Illustrates Torque-Converter Line

A new catalog describing its line of Torcon torque converters is available from the Clark Equipment Co., Transmission Division, Falahee Road, Jackson, Mich. The brochure illustrates models for applications in the 15 to 600-horsepower range. It also

shows attachments for specific adaptations.

Cutaway drawings explain the construction of the converters.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 504.

### New Le Roi Appointment

The new assistant sales manager for the Le Roi Division of Westinghouse Air Brake Co., Milwaukee, Wis., is Paul D. Sullivan. In charge of contractor sales since joining the division more than a year ago, Mr. Sullivan will move his headquarters from New York to Milwaukee for his new duties.



## Six LIMAS team-up to tame the sea at Lake Maracaibo

Campenon Bernard is using a team of six top performing Limas to build a 1½ mile breakwater across the mouth of Lake Maracaibo in Venezuela. Four Type 803's and one Type 2400 high-lift shovel load rock on the island of Toas. The rock is then shipped by barge to the island of Zapata where another Lima 2400 unloads it and deposits it in the sea to form the breakwater.

On this and hundreds of other jobs around the world, Limas are proving that they can travel and work anywhere . . . and do every job better because of the built-in "extras" that Lima provides. You can depend on LIMA for low maintenance and less down-time.

COMPARE QUALITY! No other machine gives you as much as LIMA!

1. Piston ring type dirt seal and retainers in crawler rollers.

LIMA Type 803 loading rock on island of Toas.



2. Rollers, gears and shafts are flame or induction hardened for longer life.
3. Main machinery is placed well back of center of rotation.
4. Anti-friction bearings are used at every vital bearing point.
5. Big capacity drums and sheaves are easy on cables.
6. Propel and swing gears and power take-off are enclosed in a sealed oil bath.
7. Torque converter (optional).
8. Wherever you are, you can depend on skilled service and nearby warehouse stocks of parts to keep your LIMA on the job continuously.

COMPARE and you'll specify LIMA for shovels (¾ yd. to 6 yds.), cranes (to 110 tons) and draglines (variable). Smaller capacities available on rubber.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD



**LIMA** SHOVELS • CRANES • DRAGLINES • PULLSHOVELS  
**BALDWIN-LIMA-HAMILTON**  
 Construction Equipment Division • LIMA • OHIO • U. S. A.

# CONVENTION CALENDAR

## March 9-12 American Concrete Pipe Association

Forty-seventh Annual Meeting and Convention, Sheraton-Plaza Hotel, Boston, Mass. Howard F. Peckworth, managing director, ACPA, 228 N. La Salle St., Chicago 1, Ill.

## March 14-17 Associated General Contractors of America

Meeting, Roosevelt Hotel, New Orleans, La. C. I. Mehl, administrative assistant, AGC of America, 1227 Munsey Bldg., Washington 4, D. C.

## March 15-17 Michigan Highway Conference

Conference, Pantlind Hotel, Grand Rapids, Mich.

## March 23-24 Kentucky Highway Conference

Conference, College of Engineering, University of Kentucky, Lexington, Ky. R. E. Shaver, Department of Civil Engineering, University of Kentucky.

## March 22-25 New York State Association of Highway Engineers

Sixteenth Annual State Convention, Hotel New Yorker, New York, N. Y. Fred F. Ligouri, convention chairman, NYSAHE, P. O. Box 551, Poughkeepsie, N. Y.

## April 1-2 Michigan Engineering Society

Meeting, Cranbrook School, Bloomfield Hills, Mich. J. B. Baynes, chairman, reception committee, 441 Lowell, Pontiac 16, Mich.

## April 5-7 Ohio Highway Engineering Conference

Conference, Museum Auditorium, Ohio State University, Columbus, Ohio. Emmett H. Karrer, Professor of Civil Engineering, Brown Hall, Ohio State University.

## April 11 Wire Reinforcement Institute

Annual Spring Meeting of Board of Directors, Greenbrier Hotel, White Sulphur Springs, W. Va. Frank B. Brown, managing director, WRI, 1049 National Press Bldg., Washington 4, D. C.

## April 11-14 Purdue Road School

Forty-first School, Memorial Union Bldg., Purdue University, Lafayette, Ind. Ben H. Petty, professor of highway engineering, Civil Engineering Bldg., Purdue University.

## April 11-15 Greater New York Safety Council

Meeting, Statler Hotel, New York, N. Y. Paul F. Stricker, executive vice president, 60 E. 42nd St., New York.

## April 11-16 Concrete Reinforcing Steel Institute

Annual Meeting, Greenbrier Hotel, White Sulphur Springs, W. Va. H. C. Delzell, managing director, CRSI, 38 S. Dearborn St., Chicago 3, Ill.

## April 13-14 Earth-Moving Industry Conference

Meeting; Pere Marquette Hotel, Peoria, Ill. Harlow H. Piper, designer, Engineering Department, Caterpillar Tractor Co., Peoria.

## April 13-15 American Society of Lubrication Engineers

Meeting Sherman Hotel, Chicago, Ill. William P. Youngclaus, administrative secretary, ASLE, 84 E. Randolph St., Chicago 1, Ill.

## April 13-15 American Wood Preservers Association

Meeting, Jefferson Hotel, St. Louis,

Mo. W. A. Penrose, secretary-treasurer, AWP, 839 17th St. N. W., Washington 6, D. C.

## April 13-15 South Dakota Highway Short Course

Short Course of Instruction, Union Bldg., South Dakota State College campus, Brookings, S. Dak. Emory E. Johnson, professor of civil engineering, South Dakota State College.

## April 18-19 American Institute of Steel Construction

Seventh Annual National Engineering Conference, Hotel Muehlebach, Kansas City, Mo. T. H. Hendrix, executive secretary, AISC, 101 Park Ave., New York, N. Y.

## April 18-19 Building Research Institute

Fourth Annual Meeting, Woodrow

Wilson Hall, Princeton University campus, Princeton, N. J. Charles R. Koehler, editor, "Building Science Reporter", Building Research Institute, 2101 Constitution Ave., Washington 25, D. C.

## May 8-10 Highway Transportation Congress

Meeting, Hotel Mayflower, Washington, D. C. Arthur C. Butler, director, National Highway Users Conference, 966 National Press Bldg., Washington 4, D. C.

## May 16-20 American Materials Handling Society and Materials Handling Show

Meeting and Exhibit, International Amphitheatre, Chicago, Ill. Kenneth E. Knowles, Clapp & Poliak, Inc., 341 Madison Ave., New York 17, N. Y.

## June 7-10 American Welding Society

Third Annual Welding Show, con-

current with Annual Spring Technical Meeting, Municipal Auditorium, Kansas City, Mo. Joseph G. Magrath, national secretary, AWS, 29 W. 39th St., New York, N. Y.

## Indiana Awards Contract To Install Toll System

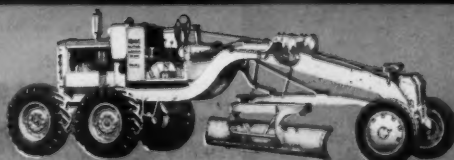
The prime contract for the installation of a toll system and audit equipment on the state's East-West Toll Road has been let by the Indiana Toll Road Commission.

Taller & Cooper, Inc., engineering and manufacturing firm of New York, N. Y., and designer of the new collection system, was awarded the \$1,356,000 contract at a meeting in Indianapolis. The system incorporates the latest advances in toll collection.

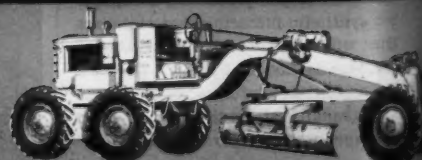
# ADAMS.



Available in 4 Improved Models-75 H. P. to 140 H. P.



Adams "330"—75 H.P. . A good general-purpose machine



Adams "440"—100 H.P. . Offers new value in this size

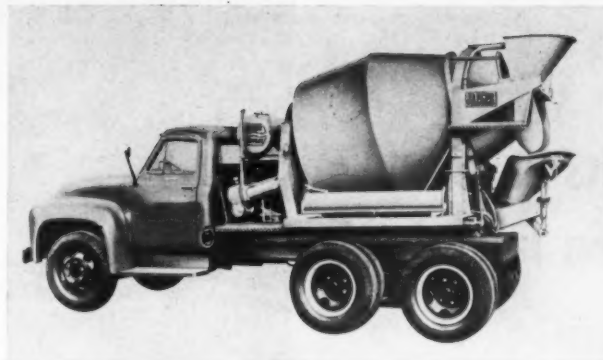


The most recent addition to the Jaeger Mix-Plus line is this new 3½ to 4-yard truck mixer.

### Improved Truck Mixer Offers Fuel Economy

■ A new mixer designed to haul 3 to 3½-yard legal payloads on single-axle trucks and 4 to 4½-yard payloads on light tandem-axle trucks has been placed on the market by the Jaeger Machine Co., Columbus 16, Ohio.

The mixer is powered by a 4-cylinder engine which operates within maximum torque range. Substantial fuel savings are reported for this engine by the manufacturer. A three-



speed Warner industrial transmission gives a wide range of forward and reverse drum speeds from 1½ to 16 rpm

within economical engine speeds of 800 to 1,600 rpm.

Other features include new Quick

Lock chute carriers that save time and effort, and an improved swing-away chute that swings clear for direct discharge into hoppers. A Quick-Way water injector eliminates water bells and packing glands.

Discharge blades reported to be 25 per cent larger than before assure faster discharge of low-slump concrete. An improved open-end loader has a steeper angle and bigger throat for faster charging. The drum is of wear-resisting ManTen steel with ¼-inch double-convex head, 3/16-inch automatic-welded shell, and 3/16-inch die-formed spiral mixing blades.

Standard equipment includes mudguards, wash-off hose, a 3-piece 13-foot chute, a fuel tank, and a hopper-inspection platform.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 480.

## most advanced line of Motor Graders on the market

Only ADAMS gives you all these time-saving, work-producing features—in all models



**FULL CONSTANT-MESH TRANSMISSION**—Heavy construction... Easy shifting... Helical gears on roller bearings for long life—finest ever put into any grader.



**4 REVERSE SPEEDS**—Up to 13 mph... Save valuable production time backing on short stretches, working between forms, bucking snow, etc.



**8 FORWARD SPEEDS**—Provide right speed for every operation, plus higher travel speeds—up to 26 mph. Save time, increase production, reduce costs.



**DUAL BRAKING SYSTEM**—Service brake applies hydraulic braking action to transmission as well as wheels—provides quicker, safer stops.



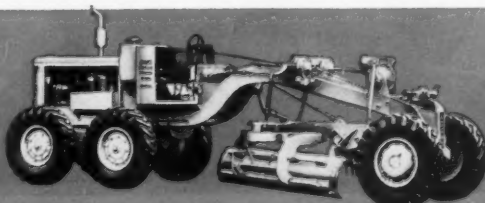
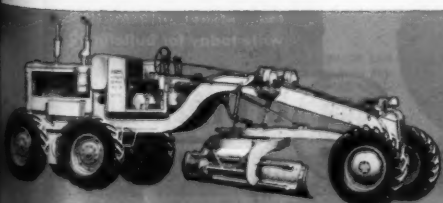
**3 CREEPER SPEEDS (optional)**—¼ to 1¼ mph. Use full engine power while gearing grader to slow-speed operation. Reduce shocks, tire and clutch slippage.



**RUBBER-MOUNTED ENGINE**—Full floating power—no engine vibration transmitted to grader. Operator efficiency substantially increased.

ADAMS DIVISION, LeTourneau-Westinghouse Company, Indianapolis, Indiana

Let Your Adams Dealer Demonstrate These Advantages



Adams "580"—115 H.P. . Most productive grader in its class

Adams "640"—140 H.P. . World's most powerful grader

### Scaffolding Improved By Plating Brace Lock

■ By zinc-plating the male fittings on all Ezebilt side braces, the Universal Mfg. Corp. has made the bracing of the scaffold panels a more efficient operation. The new finish also provides additional protection against rust and corrosion to help make erection and dismantling trouble-free. Both the male pin and trigger mechanism are plated.

For further information write to Universal Mfg. Corp., Zellenople 1, Pa., or use the Request Card at page 18. Circle No. 401.

### Data on Excavator-Crane In 20-Ton-Capacity Class

■ Construction features, work capacity, and applications of the recently announced Koehring Model 405 excavator are described in a new catalog available on request. The crawler-mounted excavator is rated as a 20-ton lifting crane.

Attachments illustrated include a 1-cubic-yard shovel and hoe dipper, and the 20-ton crane boom. Various sizes of clamshell and dragline buckets are used with this boom depending on the material to be lifted. Digging depth of the hoe is 22½ feet.

To obtain this literature write to Koehring Co., Milwaukee 16, Wis., or use the Request Card at page 18. Circle No. 506.

### Converting a Tractor To a Long-Range Excavator

■ Owners of tractors equipped with a two-drum winch will find scraper and slackline bucket sizes for 40 to 150-hp tractors in a new bulletin from Sauerman Bros., Inc. Information includes maximum spans, line speeds, and capacities in cubic yards.

Tractor-powered Sauerman scraper machines work in places that do not have the headroom other machines require, as well as over surfaces that will not support the weight of heavier machines. The slackline cableway gives owners a long-range excavator with very little additional investment, it is pointed out.

To obtain this literature write to Sauerman Bros., Inc., Dept. C-34, 620 S. 28th Ave., Bellwood, Ill., or use the Request Card at page 18. Circle No. 491.

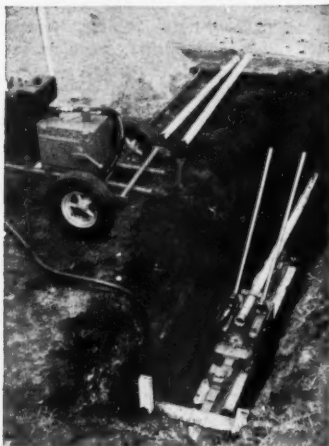
## Precasting units saves time on irrigation lateral job

**Total of 141 structures  
are cast at site; pipe  
is jacked under roads  
to avoid patching**

**FAST, EASY WAY**

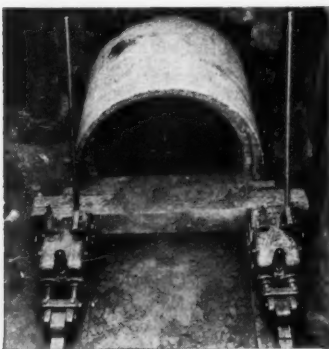
**TO INSTALL PIPE...**

**AT LOWER COST**



### **PUSH PIPE UNDERGROUND WITH A GREENLEE HYDRAULIC PUSHER**

Here's the simple, cost-cutting way to install underground pipe. Speed your jobs with a GREENLEE Pusher. One-man-operated, portable, simple to operate. No tearing up of pavement... eliminates extensive ditching, tunneling, backfilling, tamping, repaving. Cuts job time to a fraction. GREENLEE Hydraulic Pipe Pusher often pays for itself on first job. Two sizes — model shown above for pushing 3/4" to 4" pipe. Larger unit, below, for pipe over 4", concrete sewer pipe and large drainage ducts. Power pump (as shown above) also available for extra ease and speed of operation.



Write today for descriptive literature. Greenlee Tool Co., 2263 Columbia Avenue, Rockford, Illinois, U.S.A.



Three-sack batches are weighed into a Ford F-600 five-compartment truck by this Winslow Binanbatch plant, set up in a roadside cut near the job site. Materials, fed into the plant at the upper level, pass to the bins by gravity.

C&E Staff Photos

By precasting concrete structures for irrigation laterals on the Franklin and Naponee Canals in southern Nebraska, Bushman Construction Co., St. Joseph, Mo., gained the advantage of plant production on small structures to be installed at widely scattered locations. The canals, located on opposite banks of the Republican River near Franklin, Nebr., are only a portion of the Bostwick Division, a small phase of the Missouri River Basin project being developed by the U. S. Bureau of Reclamation. When these two canals are completed, they will carry water from the Harlan County Reservoir to irrigate land on both sides of the river below the reservoir.

Altogether, a total of 141 concrete structures, including drops, checks, siphons, drop checks, and farm turnouts control the flow of water in the two projects. In addition, there are 44 metal turnouts.

The main channel of the Franklin Canal, which runs from Harlan County Reservoir to Riverton, was constructed under two separate contracts by J. D. Armstrong, Inc., Ames, Iowa, and by Bushman Construction Co. The canal has an initial bottom

width of 14 feet, 1½ to 1 side slopes, and a minimum bank height of 5.8 feet. The construction of laterals which lead water from the main canal to individual farms between the reservoir and Riverton was combined with the construction of the Naponee Canal in a single contract. The cost of this work being done by Bushman is approximately \$550,000.

The Naponee Canal, on the South bank of the river, begins with an initial siphon of 33-inch pipe, about 4,900 feet long, which takes water from the reservoir and leads it through the dam to the open-cut section of the canal. This initial section is nominally 6 feet across at the bottom, has 1½ to 1 side slopes, and is designed for a flow of about 30 second-feet. The canal proper is 44,800 feet long.

The construction of 17 miles of laterals to the Franklin Canal in the area between Harlan County Dam and Riverton is called for in the second part of the contract. These laterals are normally open ditches, three feet wide at the bottom, with 1½ to 1 side slopes. Where laterals cross roads, railroads, farmyards, or areas where the open channel would

be objectionable, a concrete pipe takes the place of the open ditch. The contract includes approximately 10,000 linear feet of bell and spigot concrete pipe in sizes from 18 to 36 inches. Laterals have 18 and 24-inch pipe except under railroads, where 30-inch tongue-and-groove pipe is used. The Naponee Canal has pipes from 24 to 36 inches in diameter. Except for copper seal points used on pipe jacked under railroads and highways, all joints are sealed with rubber gaskets.

Taking advantage of a difference in elevation, Bushman set up a screening and batching plant in a road cut adjacent to his yard. Quarry-run crushed rock, fed into a hopper by a Ford farm tractor with front-end loader, flowed onto a Pioneer two-deck 3x8 vibrating screen which separated the material into two sizes and screened out and wasted dust. The two sizes of rock flowed by gravity into two bins of a Winslow Binanbatch. Sand was charged directly into the third bin of the Binanbatch. Beneath the bins was a weighing hopper mounted on overhead rails for batching aggregates.

Crushed rock and sand for three-

## only the "Kwik-Steam" Vapor Generator gives you steam in

# 2

minutes from a cold start!

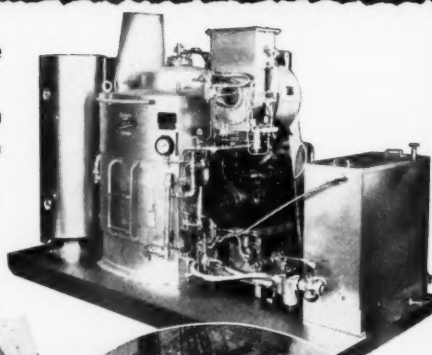
### "Kwik-Steam" ...

- Saves floor space — occupies less area.
- Saves 50% in fuel and labor.
- Saves time — you get steam in two minutes flat from a cold start.

For further information, write today for bulletin 22.

### "Kwik-Steam" indispensable for Pile Driving

- Produces steam only when needed
- Operates any kind of pile driving hammer
- You can take it where you need it — unit can be mounted on a truck, crane, trailer or skids
- Sizes from 40 to 165 B.H.P. with either electric motor or gasoline engine



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485 E. Pearl St., Cincinnati 2, Ohio

CONTRACTORS AND ENGINEERS





A P&H crane swings the Gar-Bro bucket from the mixer to a form for one of the concrete structures. An elephant trunk on the bucket permits concrete to be placed through small holes in the form.



Precast transition sections for a siphon under a railroad, are set in place by an American motor crane. Sections were hauled to the site by a Fruehauf trailer pulled by an International L-190 truck.

sack batches were weighed from the Binabatch in these proportions:

|                |            |
|----------------|------------|
| Rock           |            |
| (1½-inch max.) | 500 pounds |
| (¾-inch max.)  | 500 pounds |
| Sand           | 630 pounds |

Five such batches were weighed out into the five compartments of the F-600 Ford trucks which hauled to the mixing plant. Three sacks of cement were added to the skip of the mixer after the aggregates were dumped. Protex air-entraining agent was added to produce about four per cent air in the mix.

#### Reinforcing Prefabricated

Reinforcing steel for the complicated structures was completely fabricated at the contractor's yard. A template of ¾-inch reinforcing bars was first made up for each type of structure, and the location of each bar was indicated by a paint mark on the template. Workmen cut bar lengths from ¾-inch stock-length bars with an Edwards shear and made the necessary bends by hand. Bars were tied together with wire as they were assembled on the template. Later some of the intersections were welded to give the cage rigidity.

Spacer bars were welded to the cages to insure proper spacing in the forms. When completed, the cages were hauled on a flat-bed truck to the casting yard.

Forms were well built to produce smooth finishes, to withstand many re-uses, and to permit quick and accurate assembly and easy stripping. Inside forms were of steel construction and were collapsible for easy removal. Exterior forms were lined with ¾-inch plastic-coated plywood backed by 2×4 studs and 2×6 wales. Richmond snap ties held the inner and outer forms together. Since most of the structures are more or less open on top and solid at the bottom, they were commonly poured upside down.

Concrete was mixed in a Jaeger 14-E mixer, aggregates were dumped into the skip from the batch truck, and sack cement was added by hand. The concrete was discharged from the mixer into a ¾-yard Gar-Bro bucket which was picked up by a P&H crane and swung to the form. The several forms were set on timber bases spaced around the mixer so that they could all be reached by the crane. A flexible rubber elephant

trunk, attached to the bottom of the bucket, brought concrete through the narrow openings of the forms.

Vibration was provided by a combination of internal and external vibrators. Syntrol electric vibrators were attached to the outside of the form, and Viber electric vibrators were used in the concrete. Even though the sections were thin and the mix relatively dry, the finished structures were smooth and free of honeycomb. Individual structures required from 1 to 3½ yards of concrete. At least four structures were poured each day.

#### Cured by Steam

As soon as a structure was poured, it was covered with a 20×20-foot shed. These buildings, with extra strong roofs and no floors, had cable slings at the top so that they could be picked up by the crane and moved to various forms as the pours were made. Live steam was introduced inside the housing to steam-cure each structure a minimum of 32 hours. This heating arrangement made it possible to cast many of the structures during winter and early spring.

(Continued on next page)



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No 630-AA  
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LUBRICANT

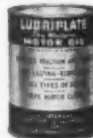
—says

THE SPOKANE PORTLAND CEMENT CO.

"With the introduction of LUBRIPLATE No. 630-AA, we were able to satisfy all our needs for solid type lubricants with only two LUBRIPLATE Products. LUBRIPLATE No. 630-AA might almost be considered a universal lubricant. Furthermore, it has effected marked savings in both lubricants and labor!"

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LUBRIPLATE is available in grease and fluid densities for every purpose... LUBRIPLATE H. D. S. MOTOR OIL meets today's exacting requirements for gasoline and diesel engines.



For nearest LUBRIPLATE distributor see Classified Telephone Directory. Send for free "LUBRIPLATE DATA BOOK"... a valuable treatise on lubrication. Write LUBRIPLATE DIVISION, Fiske Brothers Refining Co., Newark 5, N. J. or Toledo 5, Ohio.



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**FITS EVERY SAW:** Regardless of type of saw used, new \*DTA BOART Diamond Blade cuts any Concrete or Asphalt. Precise specifications available for all concrete green, cured or aged, any aggregate.

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Customers' reports say that \*DTA BOART Diamond Blades are cutting Concrete Products, Glazed Tile, Fire Brick, Glass Block up to 3 times faster than with conventional blade. You get consistently better performance and superior, low cost cutting with new \*DTA Diamond Blades.

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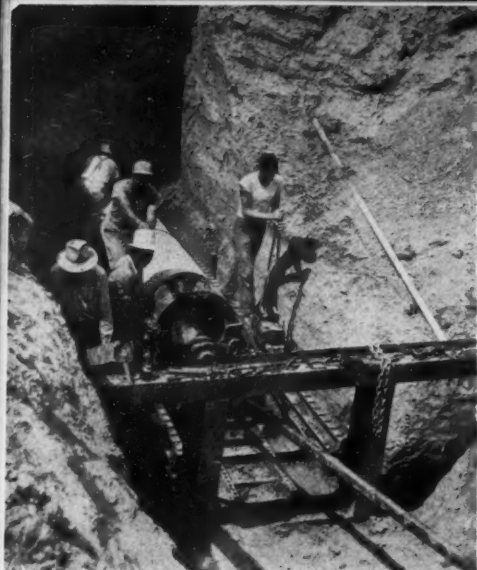
1. Outstanding research and development.
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3. Highest quality diamond BOART.
4. The best in metal bondings.
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6. Complete sales and field service by experienced personnel selected for their knowledge of your cutting problems.

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Concrete pipe 18 inches in diameter is pushed under a road by a pair of Greenlee jacks. A Ka-Mo auger, which reaches through the pipe to clear a path, is driven from the power takeoff of a tractor.

(Continued from preceding page)

Completed units were stored in the yard near the casting plant until needed.

A placing-operation sequence had two or three of the structures loaded on a Fruehauf trailer pulled by an International L-190 truck and hauled to the site where excavations had been prepared to receive them. Using cable slings, an American 375 truck crane picked the 2 to 7-ton units off the trailer and set them in place. After a unit had been set to proper grade and location, backfill was carefully compacted around it. Most of these structures are attached to the ends of runs of pipe. Annular spaces remaining where pipes fit into sockets were filled with grout through a hole provided for the purpose.

Pipe installations were handled by

a special crew. A Lorain TL-25 crane with a ¾-yard Williams dragline bucket excavated the trenches. Then the crane lowered the lengths of 18 and 24-inch reinforced-concrete pipe into the trench. After the pipe joints had been sealed with rubber gaskets, trenches were backfilled by a Ford tractor with front-end bucket. Backfill was carefully compacted with Gardner-Denver air tampers powered by an Ingersoll-Rand 105 Gyro-Flo compressor.

#### Jack Pipe Under Highway

Pipes were jacked under existing highways in a number of cases, so that the roadway surface would not be disturbed. This work was done by Hellander Construction Co., Lincoln, Nebr., under a subcontract. An Allis-Chalmers HD-5 tractor with Tracto-Shovel excavated a face as nearly vertical as possible and prepared a base on which to start the pipe. The jacking frame was set up on this base and securely anchored into the sides of the excavation. A section of pipe was then set up on the frame and adjusted to proper grade and alignment. A pair of Greenlee 75-ton twin-cylinder hydraulic jacks, operated manually, provided the power for pushing the pipe.

A Ka-Mo auger, operated from inside the pipe, removed the material to be displaced by the pipe. The auger was fitted with a cutting head about ½-inch larger than the outside diameter of the pipe. The unit's gear case was securely chained to the jacks so that, as the jacks were operated, the auger was forced into the ground to excavate a hole for the pipe. Power to operate the auger was supplied through an extensible splined shaft from the power takeoff of the HD-5 tractor. Once operating, this equipment set pipe in place at a rate of about 12 feet per hour.

Earthwork under this contract was sublet to Wentz Construction Co., Concordia, Kans. Using La Plant-Choate and Bucyrus-Erie scrapers pulled by Caterpillar D8 and D7 tractors and a Caterpillar DW10 and scraper, Wentz excavated the cuts to within about 6 inches of final grades. Fills were built up about 2 feet above grade and carefully compacted. The final ditch section was then excavated with a Landon ditcher mounted on two rubber-tire wheels and pulled by an Oliver wheel tractor. As this unit's cutting edge moved through the ground, a 4-blade propeller cast the dirt to the sides against adjustable deflectors which windrowed the material on each bank of the lateral. A Ford V-8 engine powered the ditcher. Final shaping of berms was done with a motor grader.

#### Personnel

General superintendent for Bush-

## What's the news in big gravel plants?

- **Is it the overhead eccentric jaw crusher?**  
Universal introduced it in 1906.
- **Is it the 4' x 12' 2½ deck gyrating screen?**  
The Senior "R" has had it since 1952 — and with a full 48 sq. ft. of working area.
- **Is it the 30 inch conveyors?**  
The 880 Senior "R" has featured them since 1952.
- **Is it designed to meet highway weight limitations?**  
Universal's 880 Senior "R" has met this requirement since 1952.

## The Real news is what's new in the Universal 880 SENIOR "R"

- **New 30"x26" Roll Crusher**  
Now, the greatest secondary crushing capacity ever offered in a plant of its weight class.
- **New Head Drive Front Delivery Conveyor**  
Gives you a smoother, faster delivery of the Senior "R"'s tremendous output.
- **New Dual Clutch Control On Front Delivery Conveyor**  
Now, the rapid discharge can be controlled from either plant or ground providing real convenience, economy and control at all times.
- **New "Outside of Plant" Jaw Adjustment**  
Now, you can change the 1036 primary jaw discharge opening quickly and take full advantage of any changes in pit conditions. This feature reduces downtime and increases your overall production.
- **New V-Belt Drives**  
Modern, simplified—engineered for more efficient and trouble-free operation.
- **New Extended Operator's Platform**  
Gives you greater convenience in operating the plant.



The Universal 880 Senior "R" continues to make high-production and big profit news. Its easy portability and flexibility make it the ideal plant to handle most gravel crushing operations. Now, with these new features, the Senior "R" will give you even bigger production with easier, more convenient operation. Compare before you buy and you'll buy the Universal 880 Senior "R". Write for bulletin today!



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CONTRACTORS AND ENGINEERS

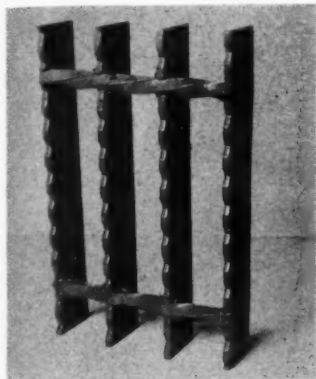


man Construction Co. was Dale Skinner. He was assisted by Leo Bonneau and Frank Wilson on structures and Jack Wisely on pipe installations. Donald Leslie supervised the pipe-jacking operations for Helander Construction Co. Olin Gray was resident engineer for the U. S. Bureau of Reclamation on the project. Ellis J. Peterson was chief inspector. Construction engineer for the Bostwick Division is R. L. Boyce, and R. A. Pampel is office engineer.

THE END

### New Grating Designed For Hazardous Areas

■ A new type of electro-forged steel grating has been announced by the Grating Department, Blaw-Knox Co., Farmers Bank Bldg., Pittsburgh, Pa. The new product is designed for areas where walking conditions are hazardous.



To achieve an extra margin of safety, the bearing bars have mill-rolled serrated edges. This is reported to provide an excellent traction surface with comfortable walking conditions. Made with crossbars of twisted steel, the 3/16-inch grating is available in 1, 1 1/4, 1 1/2, and 2-inch sizes.

For further information write to the company, or use the Request Card at page 18. Circle No. 488.

### Chemical Sterilizes Soil Under Asphalt Pavements

■ A new service bulletin on the borate weed killer, Tronabor, has been issued by American Potash & Chemical Corp., 3030 W. Sixth Street, Los Angeles 54, Calif. The bulletin deals with the product's use under asphaltic paving in airports, highways, and parking areas.

The manufacturer describes Tronabor as a nonpoisonous noncorrosive chemical that permanently sterilizes soil beneath paved surfaces.

To obtain this literature write to the company or use the Request Card that is bound in at page 18. Circle No. 420.

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 470 4th Avenue, New York 16, N. Y.  
 See page 135

### Chain-Saw Attachment Provides Extra Reach

■ A new clearing attachment for the Homelite Model 17 chain saw eliminates the need for a man to stoop and squat in felling small trees. It lets the operator reach out to the limb without having to go underneath it and takes the backache out of bucking and under-bucking.

The attachment has a jaw-grip spike that permits plunge-bucking of logs right on the ground. The spike bites into the dirt to keep the chain up out of the dirt. It also takes the thrust of the chain to prevent the log from rolling or spinning away.

For further information write to Homelite Corp., 48 Riverdale Ave., Port Chester, N. Y., or use the Request Card that is bound in at page 18. Circle No. 404.

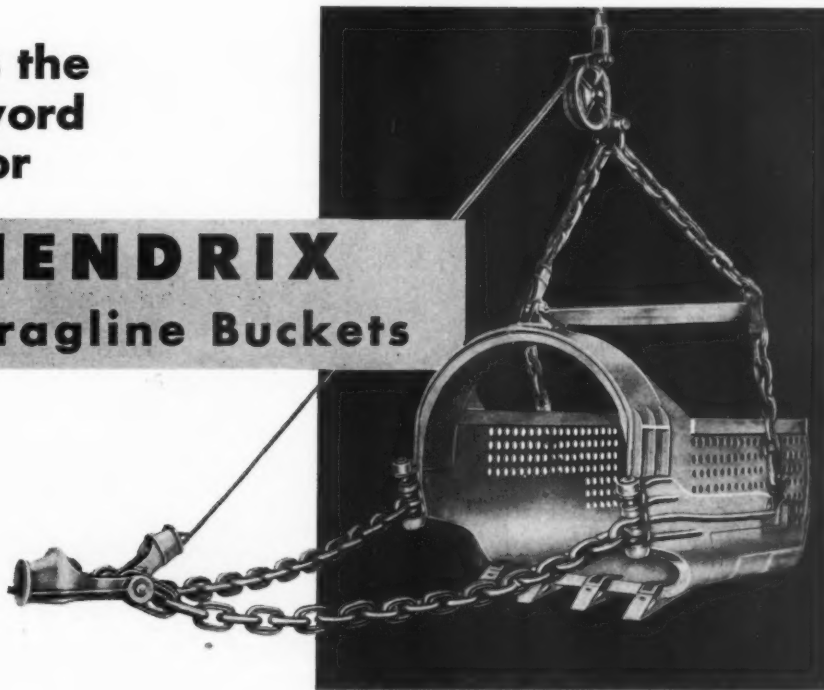


With a new clearing attachment, Homelite chain saws now have an extended reach that is useful for felling trees.

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the **LONGER LIFE** of a **HENDRIX** Bucket guarantees continued **PROFITS** on even the most difficult digging operation . . . job after job.

A TYPE AND SIZE FOR EVERY DIGGING PURPOSE

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**HENDRIX MANUFACTURING CO., Inc.**

MANSFIELD, LOUISIANA

1/4 to 40 Cubic Yards





### Crawler Tractor Offered With Choice of Engines Having Wide Torque Span

■ After testing pilot models throughout the country for more than 14 months, the Oliver Corp. has announced a new crawler tractor, the OC-12. The tractor is being offered with a choice of either a full diesel engine with 45.1 drawbar horsepower or a gasoline engine with 44.3 drawbar horsepower.

Both engines have new large radiators with pressure systems and bypass thermostats. An exceptionally wide torque span is reported for both engines to provide extra lugging under load.

Special attention has been given to operator convenience and comfort in the new tractor. All controls are within easy reach, and the instrument panel is contained in a single dial on the dashboard. Visibility is good on all sides. The fuel tank has been placed under the seat, and the 12-volt battery is concealed under the hood just in front of the operator.

The OC-12 is available in two track-gage widths, 44 and 60 inches. It is offered in two track lengths, one with four lower track wheels and one with five. The tractor weighs about 11,000 pounds without equipment.

The unit's balanced design and controlled differential steering contribute to handling ease with mounted equipment. Allied equipment includes a 1-yard hydraulic loader and a hydraulic bulldozer. The transmission has four speeds forward and two reverse.

For further information write to Oliver Corp., 400 W. Madison St., Chicago 6, Ill., or use the Request Card at page 18. Circle No. 511.

### Catalog on Steam Boilers

■ A new catalog contains complete information on the entire line of Kewanee high and low-pressure steel boilers. Also included are full descriptions and illustrations of Kewanee direct-fired and storage-type water-heating products as well as indirect water-heating coils.

Pages show boiler support brackets, structural steel suspension, and induced draft fans for Kewanee boilers along with pictures of typical installations.

To obtain this literature write to Kewanee-Ross Corp., Kewanee, Ill., or use the Request Card at page 18. Circle No. 497.

### Electrodes Designed for Underwater Construction

■ Two new electrodes for underwater work, one for underwater cutting and another for underwater welding, have been placed on the market by Pacific Welding Alloys, 310 N. Avenue 21, Los Angeles, Calif.

Pacific's UC cutting electrode is a steel tube 14 inches long with a 5/16-inch outside diameter and .112-inch inside diameter. It has an extruded flux coating which makes it completely waterproof. Oxygen is delivered through the bore of the electrode. According to the manufacturer, the electrode is easy to use and will not break in use. On land, the UC electrode can be used on metals such as cast iron or stainless steel which are difficult to cut with an oxygen-acetylene flame.

The UW welding electrode is all steel and has a waterproofed coating. In operation it produces a gaseous shield around the arc, and this excludes water while weld metal is deposited. This electrode is available in 1/8, 5/32, and 3/16-inch sizes.

For further information write to the company, or use the Request Card at page 18. Circle No. 524.

### American Cyanamid News

Serving as district sales manager of the newly formed northeastern sales district of American Cyanamid Co.'s organic chemicals division, explosives department, is Charles B. Martin. From the company's headquarters at 30 Rockefeller Plaza, New York, N. Y., Mr. Martin will serve New York and the New England states.

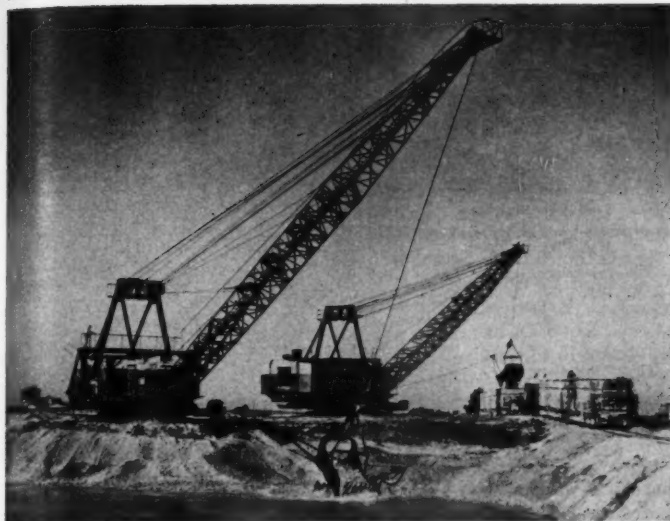


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ARE "RIGHT ON THE JOB".

Capacities: 125, 210, 365, 600, 900 cfm.





The American Chain & Cable Co. reports that field tests of its new VHS wire rope used on these Marion draglines indicated a long service life.

### High Tensile Strength Of New Wire-Rope Reduces Breakage Sharply

■ A new high-strength wire rope announced by the American Chain & Cable Co. is reported to be 15 per cent stronger than wire rope made of improved plow steel. Because of its greater tensile strength, the new grade of wire rope is expected to simplify the use of wire rope generally and to permit lighter-weight equipment to be designed. The manufacturer reports that an average tensile

strength of 300,000 psi has been achieved by the use of special precise-analysis high-carbon steel wire and improved processing.

The preformed rope, to be known as VHS, will be marketed by both the Hazard Wire Rope and the American Cable divisions of the American Chain & Cable Co. At present, the new product is available in diameters ranging from ½ to 2 inches.

Other superior characteristics claimed for VHS wire rope include greater wear-resistance, better shape retention under pressure, and greater fatigue resistance than that of improved plow-steel rope. A special new lubricant used is designed to last for the life of the rope.

Field tests reported by the manufacturer indicate that equipping draglines and shovel hoists with VHS wire rope has resulted in an impressive decrease in breakage due to shock and misuse. Handling crushed stone, eight 1¼-inch drag cables had an average service life of 170 hours as compared with an average of 80 hours for the rope previously used. The new cable is also being supplied for use as scraper ropes and for rotary drilling lines.

For further information write to the American Chain & Cable Co., Inc., 929 Connecticut Ave., Bridgeport 2, Conn., or use the Request Card at page 18. Circle No. 477.

### Revised Work on Design Of Structural Members

A new, second edition of "Simplified Design of Structural Steel" has been published by John Wiley & Sons, Inc., New York, N. Y. The book is a revised and completely up-to-date edition of a work first published in 1945. The author is Harry Parker, M.S., professor of architectural construction in the School of Fine Arts at the University of Pennsylvania.

The new edition contains revised tables of properties of structural shapes that are in agreement with the sections that are now available. Discussions and illustrative examples have been modified in accordance with current specifications and unit stresses. Many new safe load tables have been added.

Chapters are devoted to structural sections; unit stresses; reactions, moments, and shear; bendings stresses; design of beams; floor framing; riveted connections; welded connections; plate girders; columns; and miscellaneous structural elements.

The Second Edition of "Simplified Design of Structural Steel", in a professional edition, is priced at \$5.75, and may be ordered from John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y.

### Diesel Engines Described

■ A new brochure describing the operation of General Motors 6-110 diesel engines is available from the Detroit Diesel Engine Division, General Motors Corp., Detroit 28, Mich. The literature illustrates industrial and marine models rated from 200 to 575 horsepower.

Included are design features, specifications, and power curves of single, multiple-engine, and torque-converter units.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 484.



◀ This other CP Rotary compressor answers air demands for vibrators placing concrete atop a building structure in a Newark, N. J. housing project.

◀ Here a CP Rotary Compressor easily keeps up with the exhausting air demands of pile-driving on a building project in the heart of New York City.

Whether you're digging a two-acre hole, forty-two feet deep or placing concrete six stories up, you can depend on CP Rotary Compressors to fill the job's air demands to a "tee." CP Rotaries' tried and proved design features afford thousands of hours of operation without downtime for repairs. Compact, lightweight and free from vibration, their oil injection system provides full lubrication . . . yet oil consumption is remarkably low. CP Rotaries are available with Hercules gasoline engines in capacities of 125 and 210 cfm.; and General Motor diesel engines in capacities of 210, 365, 600, and 900 cfm. For more details write for Bulletin 734. Chicago Pneumatic Tool Company, 8 East 44th Street, New York 17, N. Y.



## Chicago Pneumatic

PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES  
ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

MARCH, 1955

## Utility Roller Recommended for Smaller Paving Jobs Has Been Designed to Work Close to Obstructions

■ A new addition to the field of small tandem rollers for utility purposes is a 1½-ton unit recently introduced by Pfahler Mfg. Co., Route 3, Galion, Ohio. The Ken Roll roller is recommended for pavement-patching jobs as well as for work on driveways, playgrounds, parking lots, sidewalks, and other light paving.

The utility roller has a 36-inch main or drive roll 30½ inches in diameter and features a design which will permit it to compact within ½ to ¾ inch of a wall or post. The main frame is 6-inch steel channel throughout, except at the right of the main roll, where ½-inch steel plate permits effective operation close to obstructions. The rear end is offset on

this side to allow easy steering in close quarters.

The roller is powered by a 6-hp air-cooled gasoline engine which transmits power through double V-belts to a planetary transmission. With gears always in mesh, one lever controls forward and reverse drive through band-type clutches. This simple positive drive enables the operator to shift from full speed forward to full speed reverse with one continuous movement of the lever.

A 60-gallon sprinkler tank is equipped with a foot-operated valve to save water and refill time. A low trailer is available as an accessory.

Over-all dimensions of the roller are: width, 40⅞ inches; length, 83½

Recent entry into the small-roller field is the 1½-ton Ken Roll. Sturdy construction and the ability to work in close quarters are features of the machine.



inches; height to tank top, 42½ inches; and height to top of steering wheel, 55 inches.

For further information write to the company, or use the Request Card at page 18. Circle No. 460.



Take full advantage  
of Your State  
Bridge Formula Laws

## HELP YOU HAUL MORE PAYLOAD!

- LOWER EQUIPMENT COSTS
- REDUCE MAINTENANCE COSTS
- INCREASE OPERATING EFFICIENCY
- INCREASE YOUR PROFITS



## HOBBS Schonrock Cable Dump TRAILERS CAN TRIPLE YOUR TRUCK EFFICIENCY

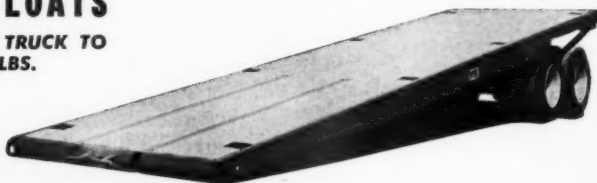
Your truck equipped with Hobbs Schonrock Cable Dump Trailer hauls three to four times as much dirt, sand, gravel or aggregate as one equipped with an ordinary dump body. This trailer can be built in any length—long enough to give you full benefit of maximum payloads allowed by bridge formula laws. This is made possible through exclusive, patented booster cam fifth wheel.



## HOBBS SELF-LOADING FLOATS

ENABLE ONE MAN WITH WINCH-EQUIPPED TRUCK TO LOAD AND UNLOAD AS MUCH AS 100,000 LBS.

Ideal for moving ditching machines, bulldozers and other heavy equipment. Specifications available on request for single axle rated at 30,000 pounds and tandem axles rated at 50,000, 75,000 and 100,000 pounds.



## HOBBS WINCH AND GIN POLE BODIES

Increase the usefulness of your utility truck with a Hobbs Winch and Gin Pole Truck Body. It performs heavy lifting, winching, loading and carrying. Hobbs heavy duty Headache Posts let you winch from a side angle, carry chain and boomers. Bodies for single and tandem axle trucks; 1½ to 12 tons.

For Complete Information, Specifications and Prices Contact

# HOBBS MANUFACTURING COMPANY

609 NORTH MAIN STREET  
FORT WORTH, TEXAS

SALES AND SERVICE IN 38 STATES AND MAJOR CITIES — DISTRIBUTORSHIPS AVAILABLE IN SOME AREAS

## Boom-Type Hoist Mounts On Front End of Truck

■ A hydraulically controlled boom-type hoist lift that mounts on the front end of a 1½-ton or larger truck has been placed on the market by Root Spring Scraper Co., 517 W. North St., Kalamazoo, Mich. Of cantilever construction, the Root hoist



Mounted on the front end of a truck, the Root lifting hoist swings its load in a 40-degree arc.

lift is capable of lifting 1,500 pounds and swinging the load in a 40-degree arc. All operations are controlled from the cab.

The manufacturer offers an easily-installed hydraulic powering unit and controls for trucks not already equipped. Also available is the Root snowplow, which mounts on the boom-supporting frame.

It is reported that the Root hydraulic boom lift has successfully handled such jobs as lifting beams, bridge members, culverts, concrete sewer pipe, and similar heavy loads. The lifting height is sufficient for loading trucks or flat cars.

For further information write to the company, or use the Request Card at page 18. Circle No. 454.

## Galion Regional Manager

A new regional manager for Galion Allsteel Body Co., Galion, Ohio, is Frank L. Hamilton. He is supervising sales of the company's dump bodies, hydraulic hoists, and rear-end truck loaders in Michigan, western Pennsylvania, Kentucky, and West Virginia. Mr. Hamilton's headquarters are located in Toledo, Ohio.

CONTRACTORS AND ENGINEERS





The Tal One Shot pipe bender has been adapted to bend tubing, as shown here.

### Hydraulic Tool Now Bends Both Pipe and Tubing

A portable hydraulic bending tool for both pipe and tubing is being marketed by Tal Bender, Inc., 417 N. Water St., Milwaukee 2, Wis. The tool consists of the Tal One Shot pipe bender with a newly developed frame. The improved model enables con-



Here the Tal bender bends pipe.

tractors to bend pipe, rigid and thin-wall conduit (EMT), hard and soft copper, aluminum and steel, and any other tubing in 90 and 180-degree angles.

When both pipe and tubing have to be bent on the spot, the newly-developed tool will eliminate the inconvenience of having different kinds of benders on the job.

The manufacturer emphasizes that existing equipment can be converted to dual use.

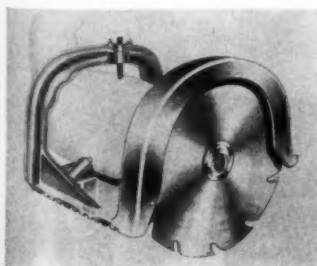
For further information write to the company or use the Request Card at page 18. Circle No. 423.

### Radial Saw Attachment Operates From Drill Motor

A new saw attachment that operates with any 1/4-inch drill motor uses a 6-inch blade. The Master saw is light in weight, being cast of solid aluminum. It can be held by one hand during operation.

The saw will cut 2x4's, and will also serve as a hedge trimmer or table saw with attachments furnished at no extra cost.

For further information write to The Master Saw Co., 1842 W. Washington Blvd., Los Angeles 7, Calif., or use the Request Card at page 18. Circle No. 444.



### New 3/8-Yard Model For Excavator-Crane Line

The addition of the new 3/8-yard Challenger Model 510 to its line of excavating equipment is announced by The Unit Crane & Shovel Corp., 6411 W. Burnham St., Milwaukee 14, Wis.

This new model features hydraulic clutch control; full-floating, trunnion-mounted, tapered drums; self-aligning hook shoes that distribute applied pressure over a maximum bearing area; and force-feed lubrication. Interchangeability of parts is an added advantage.

The cab, which affords a wide range of vision, has a large side door. Power for the excavator comes from a Ford heavy-duty industrial engine with torque converter.

Other features of Unit equipment



The new Unit 3/8-yard Model 510.

found on this model include a one-piece cast gear case, straight-in-line engine mounting, involute splines, and drop-forged parts.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 461.

Less heat waste here

More heat utilized here

Dodge V-8

**Less surface area, less heat lost**

Rounded exclusive Power-Dome combustion chamber has less surface area than irregular chambers. Thus less heat is dissipated into cooling system, more heat is utilized within the chamber to expand gases more fully, give greater thrust to piston.

**Dodge avoids power-stealing hot spots**

Ordinary ignition

Pre-ignition from carbon "hot spots"

Power-Dome combustion chambers are rounded, have no corners or pockets in which carbon deposits can build up. Such deposits become red-hot, pre-ignite the fuel-air mixture, cause engine knock and loss of power, lead to costly repairs.

**Short flame travel, better valving**

Dodge V-8

Ordinary V-8

With Power-Dome combustion chambers, the spark plugs are located at or near the center. Thus the flame has a shorter distance to travel, combustion is more even. Large unrestricted valves mean better "breathing" and greater efficiency.

# How you get more power, use less gas with POWER-DOME V-8 truck engines!



Truck owners everywhere report more power and less fuel consumption with new Dodge Truck Power-Dome V-8 engines. AAA-supervised tests proved the power of Dodge Truck V-8's in a history-making Pikes Peak climb... proved the economy of Dodge Truck V-8's in a sensational 22-mile-per-gallon Economy Run. Look at the pictures and captions shown on this page—then, for further details and an eye-opening road test, see your dependable Dodge Truck dealer!

## DODGE "Job-Rated" TRUCKS

A PRODUCT OF CHRYSLER CORPORATION



This new Lincoln welding machine has been designed to provide quickly the best combination of arc characteristics for any manual application.

### All-Purpose Welder Offers Choice of Current And Arc Characteristics

■ A new universal, combination arc welder which provides a choice of either ac or dc welding current is being introduced to the construction industry by Lincoln Electric Co., 22801 St. Clair Ave., Cleveland 17, Ohio. The new Idealarc machine provides a welding arc for every type of manual welding application, offering the welder a choice of either a soft or forceful arc.

The machine is available in several combinations. It can be obtained as an ac welder without the dc current. To this unit a dc package can be easily attached in about one hour whenever desired. It is also available as a combination ac and dc machine. Selection of either current is made through a simple twist of a switch handle. Different output capacities of dc and ac can be combined to fit the machine to the job requirements.

The manufacturer emphasizes that with these features the machine can be quickly set for maximum efficiency on every type of welding—ferrous or nonferrous materials, sheet metal or heavy plate—in all positions and under arc blow conditions or poor fit up.

Current models available are 300, 400 and 500 amps ac combined with dc capacities in 200, 300, 375 and 450 amps.

For further information write to the company or use the Request Card that is bound in at page 18. Circle No. 424.

### Coated Foundation Forms Have Smooth Surfaces

■ The plywood used in Simplex forms for poured concrete basements now has a plastic coating so that the forms will produce a surface that is smooth, glossy, and durable. The standard 2×8-foot×1½-inch plywood panels used in the forming system are coated with layers of 60-60 plastic.

An added advantage is that the surface of the panels repels concrete, simplifying cleaning of the forms.

Simplex forms provide a forming system which, according to the manufacturer, make it possible to finish a complete foundation in less than 24 man-hours.

For further information write to Simplex Forms System, Inc., 2500 N. Main St., Rockford, Ill., or use the Request Card at page 18. Circle No. 514.

### Fork-Lift Attachment Gets Greater Lift Range

■ The height to which the Model S-10 Moto-Bug fork-lift can lift its load has been increased from 5 to a maximum of 6 feet. Introduced several years ago to the construction field as a power wheelbarrow, the Moto-Bug has since developed into an all-around material-handling device through easily interchanged front-end attachments.

The standard 20-inch forks fitted to the Model S-10 Moto-Bug adjust in width from 6 to 32 inches. Rated lift capacity is 1,000 pounds at 15-inch load center and 1,515 pounds at

6-inch load center.

In addition to the Model S-10, Kwik-Mix also produces the larger Model R-15 rated to lift a 1,500-pound load to a height of 7 feet in 14 seconds.

For further information write to Kwik-Mix Co., Sales Dept., Milwaukee 16, Wis., or use the Request Card at page 18. Circle No. 432.

### Diamond Blade Cuts All Concrete and Masonry

■ Details on a general-purpose diamond blade for wet-cutting all concrete and other masonry products are available in literature from Victor

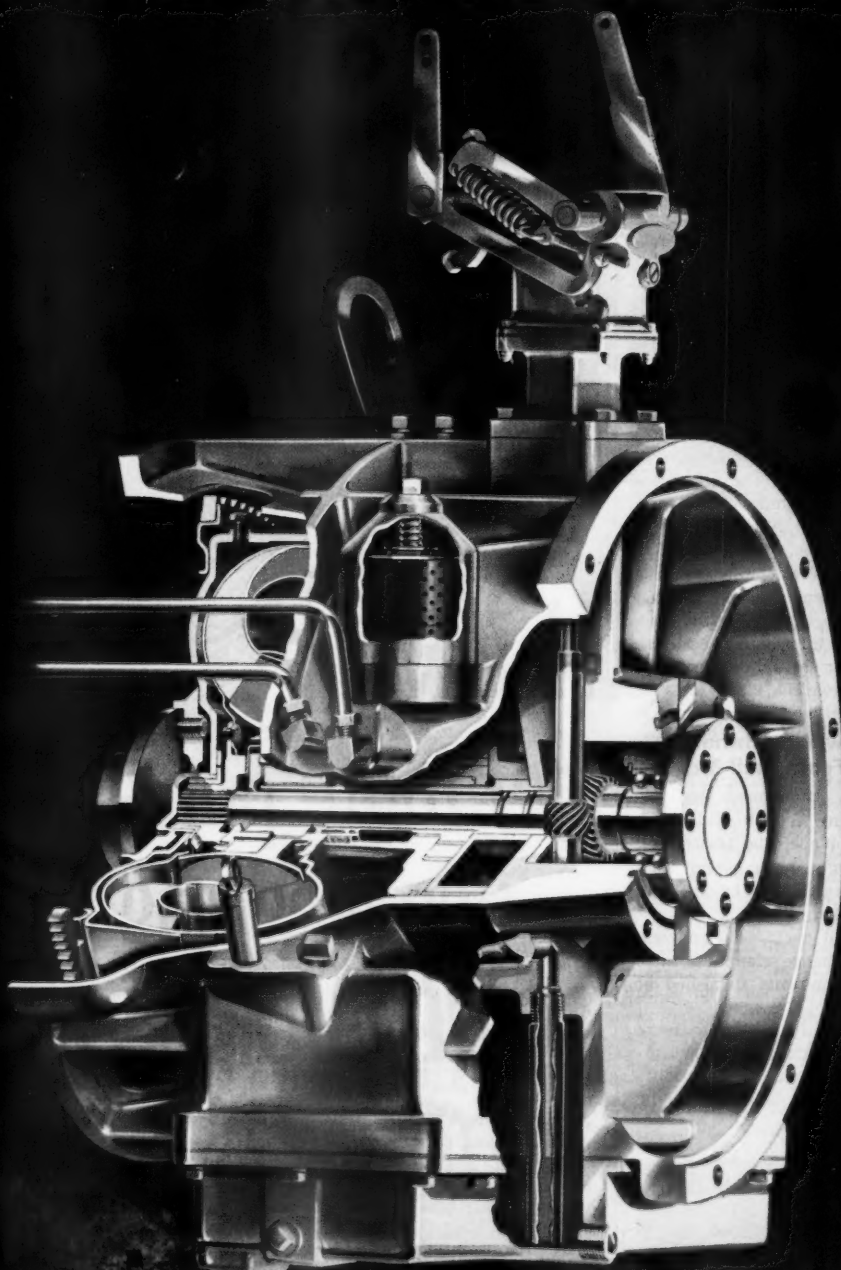
Engineering Co., Paoli, Pa. The Valor blade, which will cut firebrick, cinder, cinder block, and old and green concrete is reported to have a long cutting life. The blade is made of a new heat-resistant metal that prevents diamond loss.

Also shown in the leaflet is the Quiksilver shatter-proof blade. Made with a Fiberglas liner, this blade will withstand a considerable amount of bending and twisting.

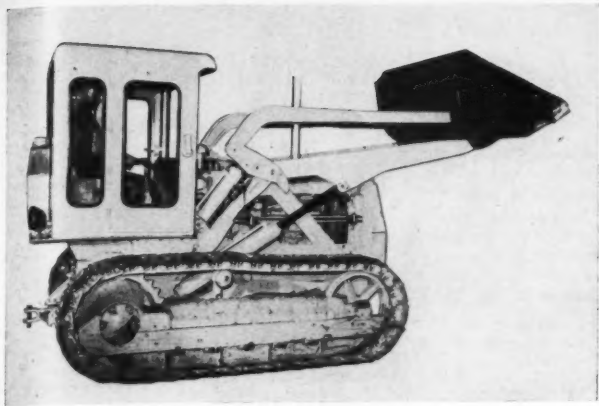
Other Valor products illustrated are wet and dry-cutting masonry blades.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 518.

# OUTPUT UP-COSTS DOWN







#### Cab for Tractor Loader

■ A new Crenlo cab for Caterpillar HT4 Traxcavators has been designed to provide extra vision and comfort for the operator. At the same time, the cab is constructed of 12-gage steel, reinforced by 3/16-inch structural steel framing for sturdiness. All connections are arc-welded for a tight and rattle-free seal.

The cab fits all Traxcavator-equipped Caterpillar D4 tractors beginning with serial number 7U11952

Newest in the line of Crenlo cabs for construction machinery is this new model for Caterpillar HT4 Traxcavator.

# with the new CHRYSLER Industrial Torque Converter

## Now available for installation on Chrysler Industrial Engines

Chrysler—famous the world over for truly engineered performance—offers a New Industrial Torque Converter designed and built to fill the intermittent need for greater torque within the recommended power range . . . employed in any application.

The New Chrysler Industrial Torque Converter provides torque multiplication of 2.6 with almost 97% efficiency in coupling range. For the first time here's a torque converter with provision for a *built-into-the-housing* speed control device. This feature, optional equipment, auto-

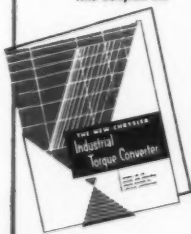
matically adjusts torque converter speed to variations in road and load conditions, making it unnecessary to rely on less sensitive engine governor. Dual cooling, liquid and direct-air, dissipates torque converter heat faster enabling more efficient operation.

The engines powering your equipment now may lack the torque they occasionally need. Here's a way to solve that added requirement *without* installing an otherwise unnecessarily large engine. Check into these and the many other advantages of the New Chrysler Industrial Torque Converter. It's two-thirds the weight of cast iron competitive units which include provision for both transmission and power takeoff clutch. Its cost is amazingly low.

## CHRYSLER INDUSTRIAL TORQUE CONVERTER

PRODUCT OF MARINE & INDUSTRIAL ENGINE DIVISION  
CHRYSLER CORPORATION  
TRENTON, MICHIGAN

WRITE FOR INFORMATION FOLDER  
Simply fill out, clip and mail this coupon for:



|   |            |             |
|---|------------|-------------|
| Chrysler Industrial Torque Converter<br>Dept. 113 Industrial Engine Division<br>Chrysler Corporation<br>Trenton, Michigan |            |             |
| YOUR NAME _____   |            |             |
| COMPANY NAME _____  |            |             |
| ADDRESS _____   |            |             |
| NUMBER AND STREET _____   |            |             |
| CITY _____  | ZONE _____ | STATE _____ |

that do not have fender fuel tanks.

Dimensions of the cab are: height, 56 inches; width, 52 1/4 inches; length, 44 3/4 inches; and door opening, 48 x 25 inches. Shipping weight is about 700 pounds.

For further information write to Dept. KP, Crenlo, Inc., Rochester, Minn., or use the Request Card at page 18. Circle No. 425.

#### Rubberizing Compound In Asphalt Test Pavement

■ A test section of asphalt paving on MacArthur Boulevard, Washington, D. C., has been laid with a newly available rubberizing agent, Firestone's synthetic latex compound Number R-504. The test pavement is slated for careful observation and analysis by the Bureau of Standards and the research division of the Bureau of Public Roads.

The new rubberizing material, developed by Firestone Rubber Paving Division laboratories, has already undergone some six years of laboratory and field analysis by the Kentucky Research Foundation of Lexington, Ky. It is reported that after the rubberized paving mixture is subjected to an accelerated aging process, it performs at least twice as well in the flexure fatigue tests as ordinary asphalt. Furthermore, it does not fracture at a 32-degree temperature, at which point conventional asphalt is extremely brittle. Also, rubberized asphalt withstands 25 degrees more heat before it reaches the degree of fluidity associated with conventional asphalt at higher temperatures.

No special equipment is needed to mix the rubberized material in batch plants, although continuous-mix plants require accessory equipment. The latex is added to the mixture after the aggregate has been coated with asphalt. The accepted mixing method calls for the addition of latex in the amount of 10 per cent by weight of the asphaltic oil.

For further information on this rubberizing compound for asphalt pavements write to Firestone Rubber Paving Division, Firestone Tire & Rubber Co., Akron 17, Ohio, or use the Request Card at page 18. Circle No. 427.

#### Line of Electric Plants

■ An improved series of compact, 1-cylinder air-cooled electric plants with capacities up to 2,200 watts is now in production at the Universal Motor Co., 531 Universal Drive, Oshkosh, Wis. The new models are offered in both dc and ac.

Specifications of the plants are: weight, 270 pounds; length, 33 inches; width, 20 inches; height, 23 inches.

For further information write to the company, or use the Request Card at page 18. Circle No. 410.



New Universal electric plants are offered in capacities up to 2,200 watts.

## Save \$\$ PLUS MAN HOURS OF COSTLY WIRE-TYING TIME WITH



View shows position of reel for left- and right-handed workers.

- **Reduces ACCIDENTS and FATIGUE:** — no loose, flipping wire ends to cause eye injury—no cumbersome wire coil around neck and shoulder, to hinder climbing, to catch on obstacles, to cause fatigue, cuts and scratches.

### "IDEAL REEL"

THE SENSATIONAL NEW  
WIRE-TYING DEVICE IN  
USE BY CONTRACTORS  
ALL OVER THE COUNTRY.

Here's a REEL that's an  
"IDEAL" money saver

Inexpensively priced

- **Saves WIRE** by stopping wire waste—gives 30 to 33% additional usage per pound of wire.
- **Saves WORK-TIME:** — speeds tying 6 to 8 more ties per minute—up to 480 ties per hour. Reel and wire are always within easy reach—ready for instant use.

Write for **FREE Circular Now**

**IDEAL REEL COMPANY**  
328 Harahan Blvd., Paducah, Kentucky

## For STRUCTURAL STEEL FRAMING

*Build Faster...*

*Build Better...*

with **HIGH STRENGTH**

**BOLTS and  
MIL-CARB\***  
**Carburized  
WASHERS**

\*Trademark

According to leading authorities in modern Structural Steel Framing Practice, high tensile steel bolting of joints instead of riveting, offers erecting contractors and owners of such structures a number of definite advantages:

- A bolted building or bridge can be completed sooner than a riveted structure.
- Hardened steel bolts, with hardened washers, can be torqued up to produce a greater clamping force than cooling of rivets can produce.
- High strength bolts of the same diameter may be substituted for rivets without reduction in size of holes.
- Your labor problem is simplified because of complete independence of field riveters.
- Bolted Construction is **QUIET** — especially desirable for building new wings to hospitals or for construction in "quiet zones".
- High Strength Bolts have higher strength than comparable rivets.
- High Strength Bolted Joints provide 25% higher fatigue resistance than comparable rivet joints.
- Bolted Construction is economical due to lower cost of structural jointing.

Build better and faster with High Strength Bolting of structural steel joints ... but remember that **NO BOLT IS ANY BETTER THAN ITS WASHERS.**

MIL-CARB Carburized Washers are fabricated from Prime Carburizing Quality Special Soundness Steel, insuring uniform quality control, always equal to the rigid specifications (ASTM Designations: A325, applying to nuts, bolts and washers).

MIL-CARB Washers overcome inherent weaknesses often present in heat-treated washers fabricated from steel of questionable quality.

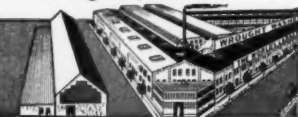
For uniformly sound construction,  
specify **MIL-CARB Carburized Washers.**

Distributed by Leading Bolt Manufacturers and  
**U. S. STEEL SUPPLY DIVISION**  
**United States Steel Corporation**  
208 South La Salle Street • Chicago 4, Illinois

**WROUGHT WASHER  
MANUFACTURING CO.**

The World's Largest Producer of Washers

2118 S. BAY ST., MILWAUKEE 7, WIS.



Timber piles are driven to refusal in one of the cofferdams by a Bucyrus-Erie 22-B crane with 3,300-pound drop hammer. While this is being done, water in the cofferdams is kept to a depth several feet below the cutoff point.

C&E Staff Photos

## Modern bascule bridge rep

**Twin-shaft piers, constructed on tremie seals, support secondary spans across tidal estuary**

Steadily increasing highway traffic along the south's booming Atlantic coastline has rapidly outmoded many of the existing bridges. All of the states from North Carolina to Florida have started modernization programs, but bridge construction is slow and expensive.

As partial solution, many of the small timber-deck and pile-bent trestles are being replaced by precast-concrete structures. The larger bridges, mostly narrow swing-type truss spans, are giving way to bascule structures with rolled-steel secondary spans supported on either precast-concrete pile bents or cast-in-place piers.

One of the major bridge projects scheduled for completion this month is a steel and concrete structure across the Wilmington River near Savannah Beach, Ga. The bridge was built by the Georgia State Highway Department to overcome a vacation-season bottleneck caused by the old and narrow swing-span bridge and its winding road approaches. Located on U. S. 80, the main highway from Savannah to the beach, the bridge was started early last year under a \$1,288,000 contract by McMeekin Construction Co., Cheraw, S. C. The new 1,300-foot structure is several hundred feet upstream from the old span.



**STURDILITE**

**Heavy-Duty  
FLOOD LAMPS**

For Better Light • Longer Service  
• Lower Cost

Especially Designed for  
Efficient Service on

Shovels • Excavators • Drag-Lines  
• Roadbuilding Equipment  
Locomotive Cranes • Tractors ...

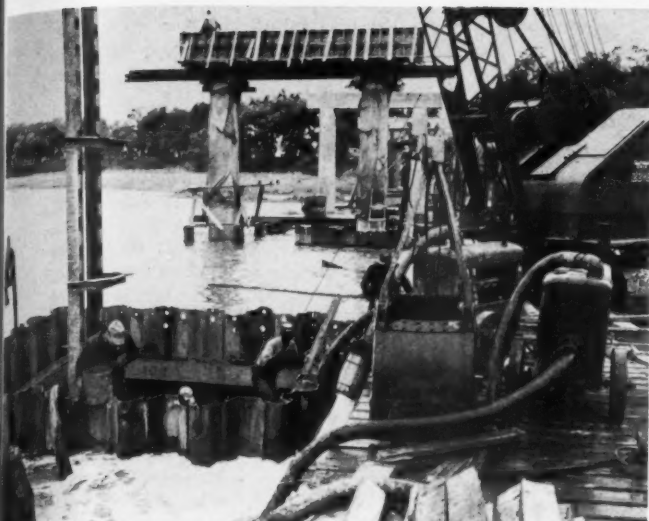
Metal Spinning Division

**PHOENIX PRODUCTS CO.**

4727 N. 27TH ST. • MILWAUKEE 16, WIS.

Write for Illustrated Bulletin.





Two Jaeger 4-inch pumps keep water at a low level in the cofferdam as a pile is driven into place. The twin-shaft piers for the bridge, background, are placed in one lift with prefabricated forms.

## Bridge replaces old swing span

### Twin-Shaft Piers

The new bridge consists of two concrete-pile abutments, fourteen twin-shaft piers, and two bascule piers. The 6-inch reinforced-concrete deck is supported by five rolled-steel beams per span and provides a 26-foot roadway with two 4-foot sidewalks. West of the bascule, the piers are about 77 feet apart, and on the east side they are 68 feet apart. All piers are supported on timber piles, up to 50 feet long, driven to 18-ton bearing.

The bascule span provides 28 feet of vertical clearance when closed. The horizontal clearance is 114 feet. Pier shafts vary up to 45 feet in height. They are 3 feet square at the cap and

taper  $\frac{1}{8}$  inch per foot of length.

McMeekin set up his yard on the west bank of the river and started work from that point. He first constructed a timber bridge, with steel stringers paralleling the main bridge, from which his equipment could work.

The foundations for each shaft consist of concrete tremie-seals up to 8 feet thick topped by a distribution block 4 feet thick.

### Cofferdams

Separate sheet steel cofferdams were driven for each shaft with a Vulcan No. 2 steam hammer. Before driving, the steel sheets were fitted to-

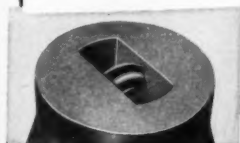
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**Frederick**  
CAST SEMI-STEEL

## BALLS

Your low cost production tool for

- wrecking old buildings ■ smashing scrap metal
- smashing old paving ■ secondary quarry breakage



Exclusive E-Z SWING steel eye, deeply imbedded in ball, gives better control; more cable protection. Special Release Hooks for "free dropping" also available.

Tough and rugged, they're made to stand abuse without maintenance cost. Made in sizes to suit your needs.

Prompt shipment F. O. B. Frederick, Md., from stock. Write today for free illustrated literature and prices on Frederick Balls and Weights that save your production costs.

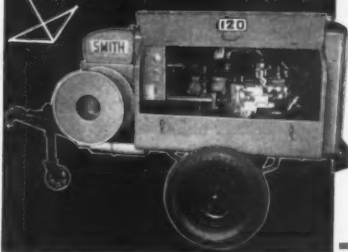
MAKERS OF MANHOLE FRAMES, COVERS AND STEPS  
• STORM GRATINGS • METER FRAMES AND COVERS  
• CENTRIFUGAL PUMPS • GRAY IRON CASTINGS

**FREDERICK IRON & STEEL, INC.**  
FREDERICK, MARYLAND

| SIZES AND WEIGHTS SHIPPED FROM STOCK |               |           |
|--------------------------------------|---------------|-----------|
| 500 lbs.                             | 2000 lbs.     | 5200 lbs. |
| (ball-shaped)                        | (ball-shaped) |           |
| 1000 lbs.                            | 3300 lbs.     | 6500 lbs. |
| 1500 lbs.                            | 4000 lbs.     | 8000 lbs. |

**save** ON YOUR  
COMPRESSED AIR JOBS!

USE THE  
**SMITH 120-P  
COMPRESSOR**



### POWERED BY CHRYSLER INDUSTRIAL ENGINE

Be thrifty . . . save your big compressors for big jobs . . . then use the Smith 120-P for the majority of your compressor work. Heavy-duty Chrysler engine has 413 cu. in. displacement. Simple, compact compressor design—no coupling or clutch. Compressor pistons operate at 120° apart for smooth, even flow of air. Corrosion-free manganese bronze compressor valves with stainless steel discs. Finned aftercooler reduces air temperature approx. 200°, gives longer hose life!

.. Also the Smith 70-P Compressor

**MAIL COUPON  
FOR COMPLETE FACTS**

GORDON SMITH & COMPANY, Inc.  
483 College St., Bowling Green, Ky.  
Send latest literature, prices on Smith 120-P and 70-P compressors.

NAME \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_  
☐ Also send name of nearest dealer.

## THE SURVEYOR'S NOTEBOOK

Reporting on Unusual Surveying Problems and Their Solutions  
Notekeeper: W. & L. E. Gurley, Established 1845

### How to Make a Plumb Board for Easier Layouts

"A couple of years ago, windy days, green rodmen and terrain hazards were slowing up construction layout," recalls George Guesmer of Minneapolis. "Reference points were hidden from the transitman by brush, dirt, concrete and construction materials. With the plumb bob swinging in the wind, accurate work became impossible."

"I solved all the problems by making a plumb board. To make one yourself, obtain a builders' three-way plumb and level (used in making an ordinary mason's level) and a piece of plywood  $\frac{1}{2}$ -inch thick, 48 inches long and the width of the plumb and level (generally three inches). Drill three one-inch holes in the plywood to permit observation of the level bubbles from the rear of the plumb board. Paint the plywood with a couple of coats of flat white."

"After the paint has dried, use black waterproof drawing ink and a ruling pen to draw a line lengthwise down the middle of both sides of the plywood. Graduate the ends of



Guesmer plumbing back of obstruction (left); offsetting.

the board in inches—or tenths, if you prefer. The alternating black rectangles make it easy to see the vertical line at a distance. To preserve the inked lines and to keep the board clean, spray the entire board with a clear plastic or brush on a clear spar varnish.

"I found my homemade 48-inch plumb board easy to handle and adequate for most work. It's especially handy for offsetting a reference line or measuring a short distance. I have run many an accurate, trouble-free mile of line using my plumb board, Gurley transits and Gurley levels."

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Variable Power, now standard on all Gurley transits and levels, permits wide range of magnification with one eyepiece. Change your magnification to suit weather and light conditions. Built-in haze filter. Write for "Facts on VP."

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**GURLEY** Surveying and Scientific Instruments

(Continued from preceding page)

gether around a 12-inch ring template supported on four timber piles, one in each corner. When the cofferdam was later unwatered the steel ring served as an internal bracing frame.

As cofferdams were completed, the material inside was excavated to grade with clamshells. Timber piles were then driven to refusal with a 3,300-pound drop hammer handled by one of three crawler cranes. Before the driving started, two Jaeger 4-inch pumps unwatered the cofferdams to a depth several feet below the cutoff point.

#### Tremie

When all piles had been driven, the pumps were removed and the cofferdams were allowed to fill with water to permit the pouring of the tremie seal. A Smith self-propelled 27-E concrete mixer was then moved out on the timber trestle to the site. Batch trucks were loaded on shore by a Butler batcher and shuttled back and forth to the mixer. The hoppers of the batcher were charged by a Bucyrus-Erie 22-B crane.

Concrete was chuted from the mixer into a 1-yard bottom-dump bucket handled by a crane stationed either on the trestle or on a barge. The 10-inch tremie pipe and hopper were hung by chain from the bucket to permit the crane to distribute the underwater concrete without breaking the flow. The average rate of pour was about twenty yards per hour.

After a suitable time, the cofferdam was unwatered and the 4-foot-thick reinforced-concrete distribution block was placed on top of the seal. Reinforcing bars were placed 4 inches above the pile tops, which extended one foot into the block.

Shafts were placed mostly in one lift using prefabricated forms. The 3/4-inch plywood form facing was backed by 3/4-inch shiplap and three 4x6 studs per side. Wale were double 4x6's. Forms, stripped the day after the pour and transferred to another pier, were re-used up to ten times. The shafts were cured for 7 days with soaked burlap.

The form panel for the base of the pier cap was supported on two 6-inch steel beams spanning the twin shafts. Four 4x4's bolted together formed a tight collar at the top of each shaft for supporting the two steel beams.

When McMeekin completed the west side of the bridge, including one of the bascule piers, he started a new construction trestle at the east bank so that he could shift his operations. In general, the procedures were similar to those used on the west half of the bridge. The contractor kept the Bucyrus-Erie crane on the trestle or back at the batch plant. Lima and Northwest cranes were each mounted on barges anchored to the trestle.

Major concrete quantities were 1,500 cubic yards in the seals, 2,790 in the blocks and piers, and 1,100 in the deck.

#### Personnel

R. C. Coleman is superintendent for McMeekin Construction Co. R. Eve is resident engineer for the Georgia State Highway Department, which is headed by M. L. Shadburn, state highway engineer. C. N. Crocker is state highway bridge engineer.

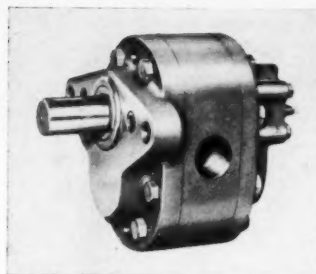
THE END

### Hydraulic Pump-Motors For Construction Machines

■ The Roper line of hydraulic pump-motors is now being marketed for use on construction machinery. The pump-motors are built to fill a need in the field of hydraulics for low-speed high-torque motors. In many applications and to conserve space, they can be directly connected to the work load without speed reducers.

Running equally well in either direction as pumps or motors, they can be operated as motors from any hydraulic circuit that furnishes the necessary flow and pressure for the desired performance range.

The pump-motors are recommended by the manufacturer for use on mobile road equipment to replace auxiliary gas engines now used for power. Other specific suggested uses are to



Roper Model 1615 hydraulic pump-motor.

provide the power for positioning the blade on a grader, to drive the bucket and conveyor on a trencher, to raise and lower a crane boom or rotate a crane cab, to drive the treads and feed of a paving machine, and to revolve the drum or operate the skip

and boom of a cement mixer.

For further information write to Geo. D. Roper Corp., Rockford, Ill., or use the Request Card at page 18. Circle No. 402.

### Safety-Equipment Catalog

■ A new safety-equipment catalog is available from E. D. Bullard Co., 275 Eighth St., San Francisco 3, Calif. The catalog describes protective headgear, first-aid kits, safety steps, safety hooks, and protective hoods. Also included are air purifiers, respiratory equipment, and safety belts.

The back page of the catalog lists all addresses and phone numbers of Bullard distributors.

To obtain Catalog No. 55 write to the company, or use the Request Card at page 18. Circle No. 482.

# Now!

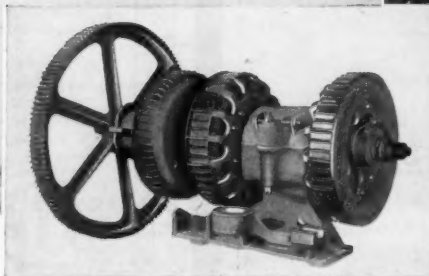
## CUT OPERATING COSTS

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**THE "RIGHT" SIZE** — Big and strong enough for impressive yardage in rock, shale and dirt. Small enough to travel easily on a rail car without major dismantling. Gets around easily in close quarters.

**EASY FIELD CONVERSION** — Easily convertible in the field from shovel to dragline, clamshell, crane, hoe or pile driving service.

**TORQUE CONVERTER** — Automatically gives operator extra torque as needed, extra speed when load is light. Protects machinery from shock. Makes all-around better use of available engine power.

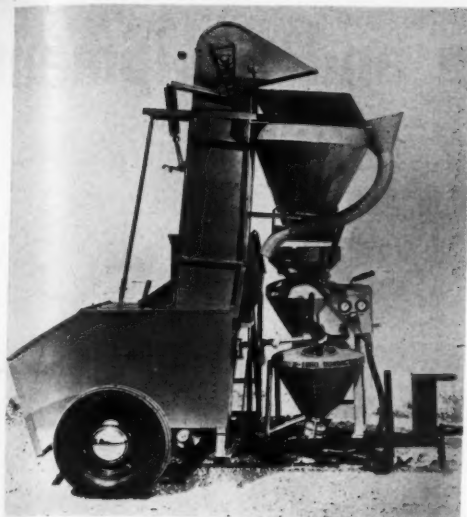


**NEW, SELF-COOLING SWING CLUTCHES** — The use of aluminum friction shoe carriers with fins and air passages on clutch housing and large holes in the friction housing assure cool performance.



**SELF-RAISING GANTRY** — Powered up or down quickly. High, retractable gantry decreases stress on boom for crane work.





This new portable rig for concrete-gunning work has combined the Airplaco Bondactor and the Mix Elevator on a wheel-trailer mounting.

### Portable Rig Combines Concrete-Placing Gun And Mixer-Elevator

■ By mounting the Bondactor concrete gun and the recently introduced Mix Elevator on a single small wheel trailer, the Air Placement Equipment Co. has produced an easily transported concrete-gunning rig. The equipment is used for concrete restoration, repair, and maintenance, and for other jobs such as waterproofing, wet and dry sandblasting, and steel encasement.

The Mix Elevator mixes the aggregate and prepares it for the Bondactor. Materials fed through a proportioning chute are fully mixed by an auger-type mixer at the base of the machine. A bucket-type conveyor picks up the mixed concrete, elevates it, and deposits it in a reservoir hop-

per directly above the Bondactor.

As the aggregate is needed, it is released into the upper hopper of the Bondactor, which guns or shoots the cementitious aggregate by compressed air. Metered continuously into the material hose, the premixed aggregate is propelled to the nozzle, which is equipped with separate air and water lines. At this point, the aggregate is thoroughly hydrated by an atomized spray. A low water ratio results in a dense durable bond.

Bondactors are available in models with capacities of  $\frac{3}{4}$  to 3 cubic yards per hour. Also available for mounting on the rig is the Airplaco Nucretor, a unit with a capacity of  $4\frac{1}{2}$  or 6 cubic yards per hour.

For further information write to Air Placement Equipment Co., 1011 W. 24th St., Kansas City, Mo., or use the Request Card at page 18. Circle No. 441.

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**AIR CONTROL SPEEDS PRODUCTION** — Only 12 pounds of hand pressure on the compensating-type air control valve releases full machine power for increased production, reduced operator fatigue.

**ANTI-FRICTION BEARINGS** — Roller or ball bearings, sealed against dirt and fitted for easy lubrication, at all principal friction points. Gears run in oil bath.

**OUTSTANDING CRAWLERS** — Self-cleaning, non-clogging crawlers never need attention. Belt tension easily adjusted.

See your nearby distributor today.

### Two Ways to Use Concrete Curing Blankets

■ Using a picture-story technique, a new booklet compares the advantages of two methods of using Sisalkraft curing blankets in road construction.

One method uses supplemental stringer sheets to cover slab edges. This method, which extends the life of the curing blankets, is also advantageous when curbing is required.

Method two uses slab-width blankets that are shipped complete on timbers. Two men easily handle the application.

The literature also shows the use of Sisalkraft on a variety of other curing jobs. It points out, too, that the same blankets can be used to protect equipment and materials from being damaged by weather.

To obtain this literature write to American Sisalkraft Corp., 55 Starkey Ave., Attleboro, Mass., or use the Request Card at page 18. Circle No. 519.

### New and Diversified Line Of Molybdenum Lubricants

■ A widely diversified line of industrial lubricants that have the friction-preventing properties of permanently suspended molybdenum is announced by Pacific Lubricants Co., 5807 E. Beverly Blvd., Los Angeles 22, Calif. Added to lubricants in the form of molybdenum disulfide, the molybdenum actually plates wearing surfaces to make them highly resistant to pressure, heat, and corrosion.

Another characteristic that makes Moly lubricants suitable for high-speed close-tolerance friction surfaces, as well as for bearings, gear boxes, and tracks is the fact that molybdenum will not build up to more than 2 or 3 ten-thousandths of an inch.

For further information write to the company, or use the Request Card at page 18. Circle No. 445.

### New Division Manager at American Manganese Steel

The American Manganese Steel Division of American Brake Shoe Co. has appointed Thomas A. Ratkowski division manager for engineering and development. With the company since 1922, Mr. Ratkowski will make his office at the division headquarters in Chicago Heights, Ill.



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MARCH, 1955

# Pipeline extension job tests men and equipment

**Machines must be winched up and down steep hills; rock is drilled and blasted for trench excavation**

by **RALPH MONSON**,  
field editor



As the pipe is assembled, a Cat D6 tractor with Hyster winch and long cable holds the GMC welding truck on the grade.

C&E Staff Photos

Pride in a difficult job well handled can be claimed by crew members who completed a 10-inch pipeline 33 miles through the rugged country bordering the Mississippi River Valley—an area where wooded hills are so steep that digging and pipelaying equipment had to be winched up and down grades.

Built for Northern Natural Gas Co., Omaha, Neb., by G. G. Griffis, Tulsa, Okla., the 33-mile natural-gas pipeline extension runs from the company's main at Castle Rock to the industrial city of Red Wing, Minn.

From Castle Rock, the right-of-way traverses rolling farm land for some miles before plunging into rough country. But as it nears the Mississippi River Valley, solid limestone and sandstone rock, underlying the shallow layer of soil, required that the trench be drilled and blasted. To add to the difficulty, streams of water flow in many of the valleys. But in spite of these obstacles, Griffis completed the line in less than four weeks.

After the clearing and grading gang had prepared the right-of-way, a Cleveland Model 320 trenching machine excavated the 5-foot-deep trench in places where soil conditions permitted. Where rock was encountered, a pair of Gardner-Denver wagon drills powered by an Ingersoll-Rand 600-cfm Gyro-Flo compressor drilled for blasting. Four Insley and Lorain backhoes then scooped out the rock to complete the trenching job. More than 20 per cent of the line was rock excavation, and some rock was encountered in practically every foot of the last few miles.

## Yard-Coated Pipe

The steel pipe, coated and wrapped prior to delivery, was shipped by rail to Red Wing. Under a subcontract, Dunn Bros. Inc., Dallas, Texas, strung the pipe out along the right-of-way, making ready for the pipe gang.

The pipe gang, which connects the pipe sections into a continuous line, started across the flat and rolling farm land, laying an average of from 14,000 to 17,000 linear feet per day. When it hit the rock and hills, the pace slackened. Under normal conditions this crew used two Caterpillar D7 tractors equipped with Trackson sidebooms to handle the pipe and a GMC 6×6 truck carrying two 300-amp Lincoln welding generators to make the connections. As the grades became more steep, a Cat D6 with a Hyster winch and a long cable joined the gang.

Then, while the regular crew was working its way toward one of the steep hills, the D6 worked its way up the slope as far as the cable would reach or until it found a reasonably flat spot. Here the tractor dug its tracks well into the ground and



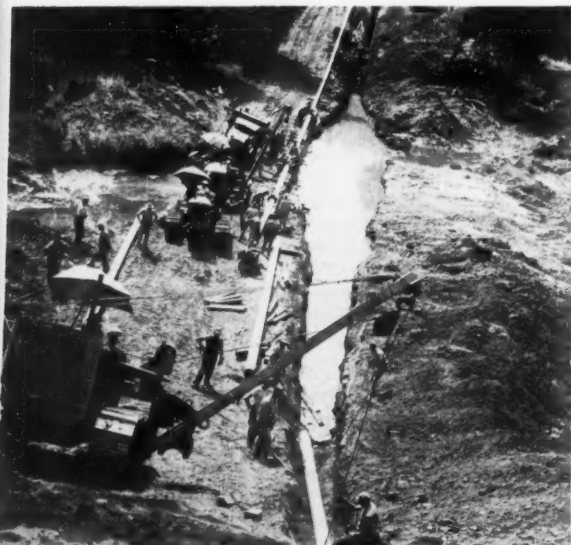
A welder completes a joint near a bend in the pipeline, using a Lincoln 200-amp welding generator. Mounted on pipe sleds, the equipment can be towed along by tractors.



Pipe is kinked to fit a change in the grade at the top of a steep hill by a pipe bender carried on a Caterpillar D7 with Trackson sideboom.



Lifted off supports near the trench by the Allis-Chalmers HD-15 tractor, the pipe is lowered into place in a Perrault Bros. cradle suspended from the sideboom.



As the Caterpillar D7 gives support, the crew checks a pipe fit in the trench. Additional sections are being assembled in the background.



A crew member wraps the pipe with Fiberglas after hot dope has been applied. The HD-15 which handles the lowering-in pulls the American Steel Works 10-barrel dope pot.





A special sideboom backfiller on an International TD-18 scoops material from the spoil bank into the trench after the pipe has been laid. Then a crew will move in to do repair and cleanup work. At right, the inside of the pipe is cleaned with a Black & Decker buffing machine fitted with a wire brush. Power is supplied by an O'Keefe & Merritt generator on the two-wheel cart. Both generator and cart are driven by a Wisconsin engine.

(Additional photo on front cover) winched the other equipment up the hill. On downhill grades, the process was reversed. The D6 sat at the top and held back with its cable as each piece of equipment worked its way down the grade, bending, laying, or welding the pipe as it went.

The lead Cat D7 was equipped with a pipe bender for shaping the pipe to the horizontal or vertical curvature of the trench. With an experienced eye, the foreman indicated the amount of bend he thought the situation required. When the pipe was bent to this angle, the tractor operator swung it into the trench to try the fit. A second try was usually unnecessary.

As the bending crew moved ahead, the second D7 picked up the pipe with a Perrault Bros. pipe calipers and held it in place while an exterior-type clamp was attached to align the joint. Welders joined the pipes with a single complete bead and the end was lowered onto blocking. Then, in a matter of minutes, the next section of pipe was being placed.

#### Joints Are Wire-Brushed

The uncoated ends of each section of pipe were thoroughly cleaned to remove dirt and rust in preparation for the welding and coating processes. Keeping ahead of the bending crew, workmen using Black & Decker electric buffing machines fitted with wire brushes cleaned the ends of all pipe sections both inside and out. Power for the buffers was furnished by an O'Keefe & Merritt 1,500 watt generator powered by a Wisconsin engine and mounted on a two-wheel cart. Although the generator cart was self-propelled—it was driven by the same gasoline engine driving the generator—it also required an assist on the steep grades.

The welding gang used six 200-amp Lincoln welding generators individually mounted on pipe sleds. Normally this gang had two tractors available to tow the welders from joint to joint. However, when the pipe gang borrowed the D6 for working up and down grades, the welders were left with just one, an International TD-14. At these times, the operator took over the extra duty and shuttled the welders from joint to joint as fast as he could go, stopping only long enough to hook on and disconnect his cables.

Behind the welders came the "lowering in" gang using two Interna-

(Concluded on next page)



## KOHLER ENGINES

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Modern design, air-cooled Kohler Engines from 2.5 to 26 H.P. offer a wide range of power to fit all applications requiring a reliable and economical power source.

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eighteen principal cities. Sales and service distributors, throughout the country have parts available and are ready to assist you in selecting a Kohler Engine best suited for your requirements. Write for information.



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AIR-COOLED ENGINES • PRECISION CONTROLS

(Continued from preceding page)

tional TD-18's and an Allis-Chalmers HD-15 tractor. In a typical cross-country operation, the HD-15 equipped with a sideboom cradled the pipe on a Perrault Bros. rolling cradle. The pipe itself rolls through the cradle on rubber tires, which prevent damage to the coating and wrapping. As this crew moved along, the uncoated joints were given an application of hot dope and wrapped by hand with Fiberglas wrapping. Any spots where the yard coating had been damaged were also doped and wrapped. Hot dope was carried in a 10-barrel American Steel Works dope pot towed by the same tractor which cradled the pipe.

As the tractor walked along beside the ditch, it lifted the pipe off the blocking, where it had been placed by

the pipe crew, and swung it into the trench. Like a huge struggling snake, the long pipe flexed as it was lowered into place. The backfiller, a special sideboom attachment on an International TD-18 tractor, pulled the spoil bank into the trench to cover the pipe.

When the cleanup crew finished repairing fences and crossings and removing any debris, there was little left on the right-of-way as evidence of the struggle this group of men and machines had in placing the ribbon of tubular steel into the ground.

#### Personnel

Superintendent of the operation for G. G. Griffin, Inc., was A. G. Hobson. D. O. Otto supervised the welding, Edward Terrsteeg the lowering in, and Ross McMahon the cleanup. A. J. Panzer was general inspector for

Northern Natural Gas Co. The project was handled by the Minnesota Division of Northern Natural, of which Ralph Cotton is division superintendent. **THE END**

#### Data on Autoclave System For Concrete-Block Curing

■ A brochure on the Bros "single responsibility" autoclave system for the high-pressure curing of concrete blocks is available from the Wm. Bros Boiler & Mfg. Co., 1057 Tenth Ave. S. E., Minneapolis 14, Minn.

The literature contains information, diagrams, and photos on the system, which includes autoclave vessels, boiler, racks, fans, ducts, valves, and fittings.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 489.



The heavy-duty Tellevel bin-level control has been improved to increase the device's ability to withstand severe impact in operation.

## Whips world's toughest terrain, TIMKEN® bearings take 23-ton load

**ROLLING** on Timken® bearings, this amazing LeTourneau Sno-Buggy, designed and built by R. G. LeTourneau, Inc., Longview, Texas, "floats" over snowfields, swamps and desert sands on the world's largest tires... 10' high and 4' wide, carrying as little as 5 lbs. pressure. Its individually-powered electric wheels propel it forward or backward at 8 m.p.h. over terrain never traveled before.

Rugged service like this means that its bearings have to take tremendous radial and thrust loads. That's one reason LeTourneau engineers speci-

fied Timken tapered roller bearings. Because of their tapered construction, Timken bearings take radial and thrust loads in any combination. They can take sudden shock loads, too, because their rollers and races are case-carburized to give them a hard, wear-resistant surface over a tough, shock-resistant core.

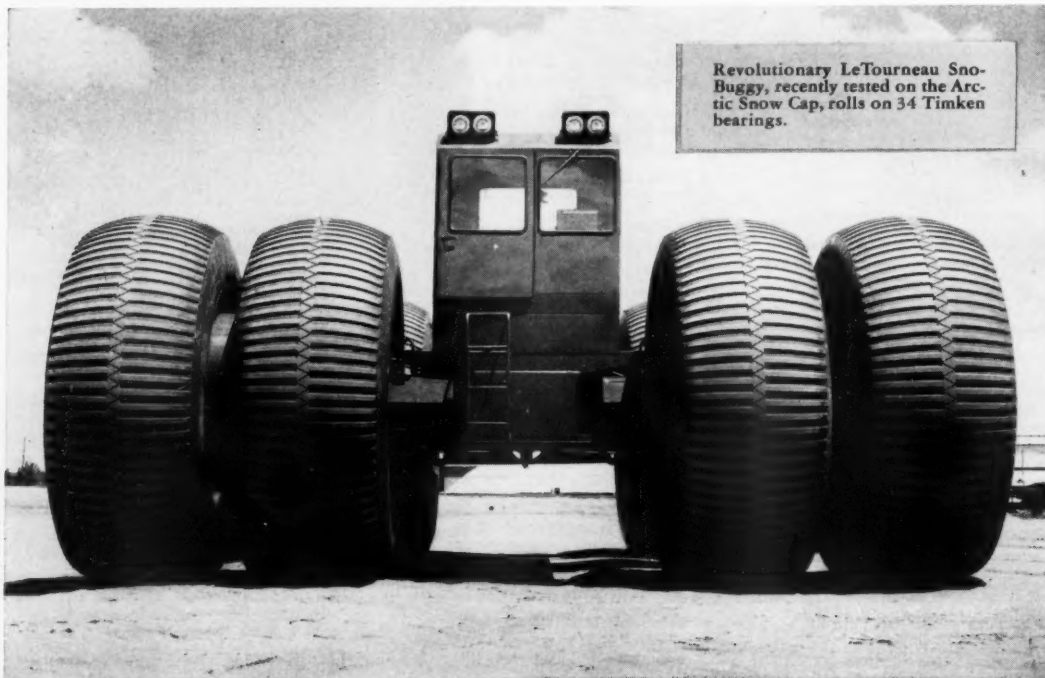
Line contact between rollers and races permits Timken bearings to carry the Sno-Buggy's heavy wheel loads. And the Sno-Buggy's huge dual tire wheels turn easily because Timken bearings are geometrically designed to have true rolling motion

and precision manufactured to live up to their design. We even make our own steel to be sure of getting the best. We're the only U. S. bearing manufacturer that does.

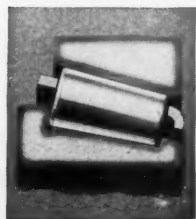
Always specify Timken tapered roller bearings when you buy or build machines. Look for the trade-mark "Timken" on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".



This symbol on a product means its bearings are the best.



Revolutionary LeTourneau Sno-Buggy, recently tested on the Arctic Snow Cap, rolls on 34 Timken bearings.

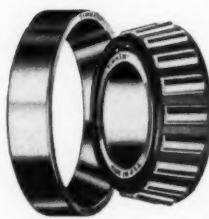


#### GREATER LOAD AREA

Because the load is carried on the line of contact between rollers and races, Timken bearings carry greater loads, hold shafts in line, wear longer.

The Timken Roller Bearing Company is the acknowledged leader in: 1. advanced design; 2. precision manufacturing; 3. rigid quality control; 4. special analysis Timken steels.

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TRADE-MARK REG. U. S. PAT. OFF.  
**TAPERED ROLLER BEARINGS**



NOT JUST A BALL NOT JUST A ROLLER THE TIMKEN TAPERED ROLLER BEARING TAKES RADIAL AND THRUST LOADS OR ANY COMBINATION

#### Improved Heavy-Duty Type Of Bin-Level Control

■ A heavy-duty model of the Tellevel bin-level control now being marketed by Stephens-Adamson Mfg. Co., Aurora, Ill., has several major improvements. By redesigning the switch housing and deflector mechanism, the manufacturer has further reduced any possibility of sticky material building up on the unit.

The pendant steel cone deflector has been replaced by a steel pyramid. The switch housing is now a one-piece unit of spun steel tapped at one end for electrical conduit and sealed at the other end by a molded rubber grommet. Other design features remain unchanged.

The heavy-duty Tellevel bin-level control is suitable for severe operating conditions and is built to withstand impact of stone and other hard material in which there are lumps of more than 3/4 inch.

Standard-duty and explosion-proof Tellevels are available for lighter service with small lump, granular, and powdered materials.

For further information write to the company or use the Request Card at page 18. Circle No. 426.

#### Clark Appoints McKinley

Russell L. McKinley is the new field service manager of the construction machinery division of Clark Equipment Co., Benton Harbor, Mich. Previously, Mr. McKinley was service manager for Browning Crane & Shovel Co., Cleveland, Ohio.



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CONTRACTORS AND ENGINEERS



## New Self-Propelled Model In Concrete Saw Line Is Heavy-Duty Unit

■ The second Eveready BrikSaw concrete-cutting saw to be offered with an optional self-propelling feature is a heavy-duty unit. The Model E-25-PD is equipped with a 25-hp 4-cylinder air-cooled gasoline engine that drives the saw under full load at speeds up to 12 fpm. Two abrasive-coated wheels act as a smooth and positive friction drive to both rear wheels of the saw.

The self-propelling unit, which the manufacturer calls Powr-Drive, is engaged or disengaged by foot pedals. Cutting speed is quickly set by turning the control lever on the variable-speed transmission.

The entire powering mechanism of the saw has been designed to eliminate slippage, bumping, or twisting of the blade as far as possible. Also designed to prevent blade binding and wear is Eveready's Tri-Matic blade alignment. With this feature, the blade is held straight in the cut when the saw wheels are passing over uneven surfaces. The manufacturer emphasizes that, although the Tri-Matic suspension of the front axle has the effect of providing a 3-point suspension of the blade, the saw is firmly mounted on four rubber-tire wheels.

The new 25-hp saw is a companion model to the 14.6-hp Model E-15-PD, introduced to the construction industry last year.

For further information write to Eveready BrikSaw Co., Dept. 313, 509 S. Michigan Blvd., Chicago 5, Ill., or use the Request Card at page 18. Circle No. 439.

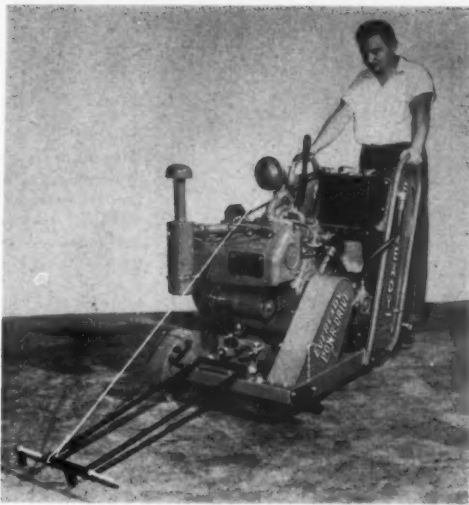
## Mat for Road Rollers Wets and Brushes Evenly

■ A new mat recently announced provides a constant wash for road rollers. The Hydro-Mat has been designed to distribute water evenly over the entire surface as it brushes the roller.

Made of cocoa fibers, the mat is reported to use less water, hold moisture longer than comparable products, and maintain a brush-like stiffness. Its construction features a triple-reinforced binding. Sizes to fit all rollers are available.

For further information write to Koffler Sales Corp., 3757 N. Racine Ave., Chicago 13, Ill., or use the Request Card that is bound in at page 18. Circle No. 433.

The Eveready BrikSaw Co. has announced a new heavy-duty concrete saw available with Powr-Drive. With the self-propelling feature, the saw moves at a constant rate and makes a straight cut without drifting.



## What Modern Lubricants Do for Diesel Engines

■ An up-to-date report on the development of efficient lubricating oils through which the contractor can get added years of reliable service from diesel engines is given in a new booklet from Caterpillar Tractor Co., Peoria, Ill.

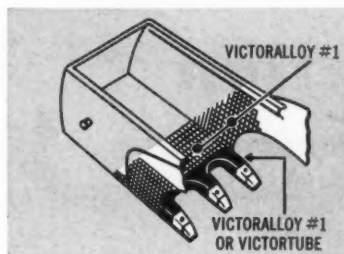
The story of Caterpillar's oil-research program began in the spring of 1933, when the company started exhaustive studies which were to interest many oil companies. By tracing the problems that were met and solved over the years, the booklet gives the reader an understanding of the advantages offered by modern lubricating oils.

To obtain Form No. 12440 write to the company, or use the Request Card at page 18. Circle No. 493.



how to put  
**New Life**  
IN OLD  
BUCKETS

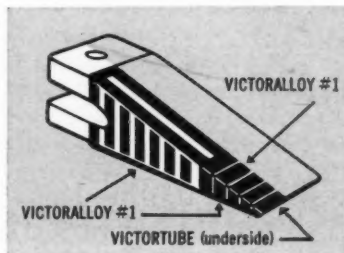
## USE VICTOR HARDFACING



**Buckets . . .** Apply VICTORALLOY #1 to top and bottom of bucket lips in overlapping beads. Protect other parts or areas showing wear with stringer beads of VICTORALLOY #1. Use 3/16" coated VICTORALLOY #1 at 170 to 190 amperes, a.c. or d.c., or 1/4" at 200 to 225 amperes. If wear is unusually severe, substitute VICTORTUBE on bucket lips; use 3/16" coated at 120 to 150 amperes, a.c. or reverse-polarity d.c.

**Teeth . . .** Apply VICTORTUBE to underside from point upward about 2", and VICTORALLOY #1 to upper side of tooth same distance. Use stringer beads of VICTORALLOY #1 on balance of upper and lower surfaces, and on edges. Use 3/16" coated VICTORTUBE at 130 to 160 amperes, a.c. or reverse-polarity d.c., and 3/16" coated VICTORALLOY at 170 to 190 amperes, a.c. or d.c.

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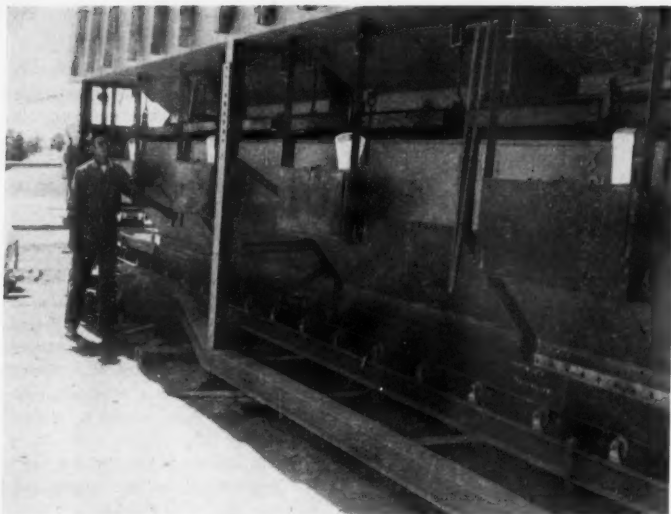
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## Unique batch plant makes su

Instead of being narrow and high, Kilgroe's plant is 32 feet long, 8 feet wide, and 10½ feet high. This reduces problems in conveying materials to the welded steel bins and permits the unit to be hauled easily.

Ray Day Photo

A long and low portable concrete-batching plant, capable of turning out 50 cubic yards of concrete per hour, has been developed by L. H. Kilgroe, general contractor of Denver, Colo. By disregarding traditional batch-plant design in nearly every detail, Kilgroe has come up with

what he regards as a completely new portable plant. Tried for the first time on a \$300,000 underpass job on U. S. 85-87 south of Monument, Colo., the new machine easily lived up to Kilgroe's expectations.

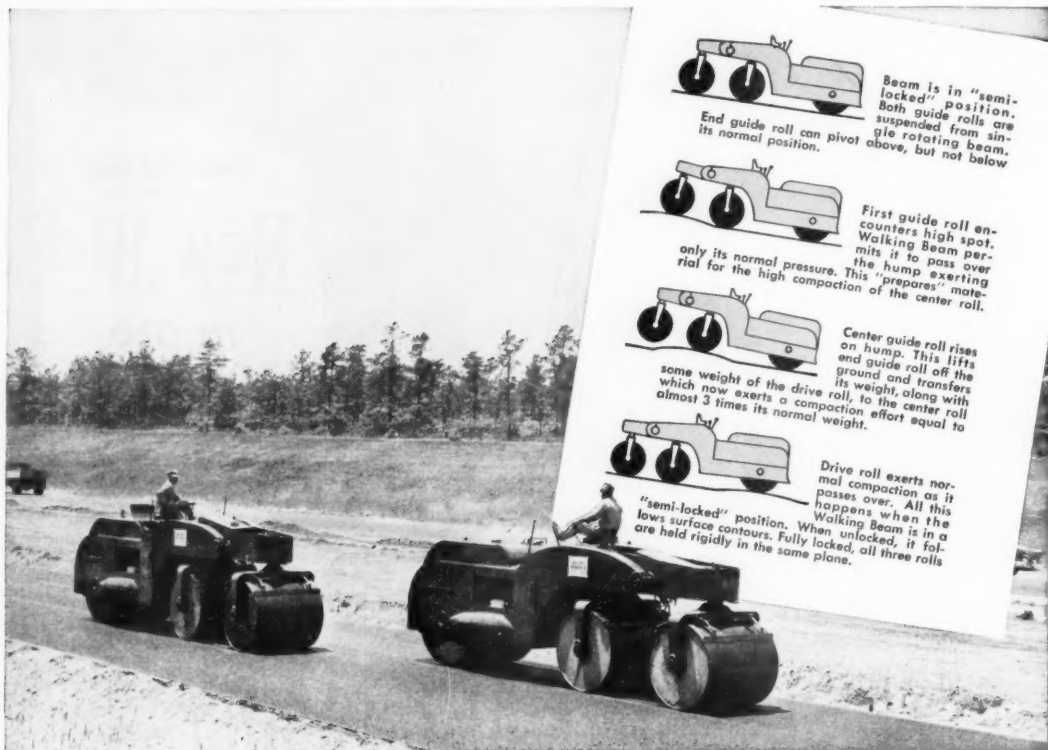
The Breed underpass structure was designed to carry tracks which handle trains owned by four major railroad companies. Two separated lanes for vehicular traffic run underneath. The structure called for 300,000 pounds of structural steel and 1,500 cubic yards of concrete. The new batch plant which Kilgroe designed and built handled 160-cubic-yard pours in six hours. Only one hauling truck was used on the job.

### Unconventional Design

Kilgroe's brain child discards many design ideas incorporated in conventional concrete-batching plants. Instead of being high and narrow, the plant is low and long. It has long and narrow gated openings instead of the traditional wide square ones. The plant uses unlimited low-cost storage area on the ground nearby, instead of limited costly storage inside the plant bins.

The plant was developed especially to meet the need for a portable outfit which would deliver good production on small concrete jobs. The rig is especially adapted for work on underpasses, bridges, the concrete portions of soil-conservation dams, and even highways.

Backed by approximately 30 years' experience in all types of concrete



## Extra compaction

... where and when it's needed with  
**Buffalo-Springfield 3-Axle Tandem Walking Beam**  
compaction control

The Buffalo-Springfield 3-Axle Tandem is aiding contractors to beat deadlines... get more production... and build better roads. It will compact 60% more tonnage than a standard 2-Axle tandem working on the same type surface. Tests have proven that the roughness indices of pavements compacted with normal rolling equipment are more than twice as great as for the 3-Axle Tandem.

Exclusive "Walking Beam Compaction Control" gives extra effort when and where it's needed... both guide rolls are suspended from a single rotating beam. The controlled

transfer of weight principle irons out high spots faster and better.

The illustrations above show how the Walking Beam operates. It may be fully locked, if desired, semi-locked, or completely unlocked to roll ver-

tical curves and warped surfaces.

See your nearest Buffalo-Springfield distributor today. Ask him to show you proof of the many time and money saving features of this roller. Or write for Bulletin S-62-53.

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P. S. ... In every industry the products of one manufacturer stand out as "The Standard of Comparison" because of certain built-in qualities of excellence. Thus it is, and has been for over 65 years, with Buffalo-Springfield compaction equipment. Contact your nearest Buffalo-Springfield distributor today for additional information on the complete Buffalo-Springfield line.

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CONTRACTORS AND ENGINEERS



# makes successful shakedown run

**Contractor designs long, low, portable unit for work on many small-size concrete jobs**

work, Kilgroe believes the unit may bring big-plant efficiency to some of the small or medium-sized concrete jobs. Rocky Mountain contractors have shown a great deal of interest in the plant. To date, Kilgroe has received 12 tentative requests to duplicate his unique plant. And one contractor from Shawnee, Okla., who interrupted his vacation to study the underpass job—is making plans for introducing the machine into Oklahoma. Local interest in the plant has been so high that Kilgroe plans to place the unit in commercial production immediately.

## Plant Features

Built entirely of steel, Kilgroe's plant is 32 feet long, 10½ feet high over-all, and 8 feet wide. It weighs 6,000 pounds empty. The plant is manually controlled and has four bins, each holding approximately 4 cubic yards. Every working part of every bin is interchangeable, and by means of U-bolt connectors, the bin levers are arranged for the greatest possible simplicity.

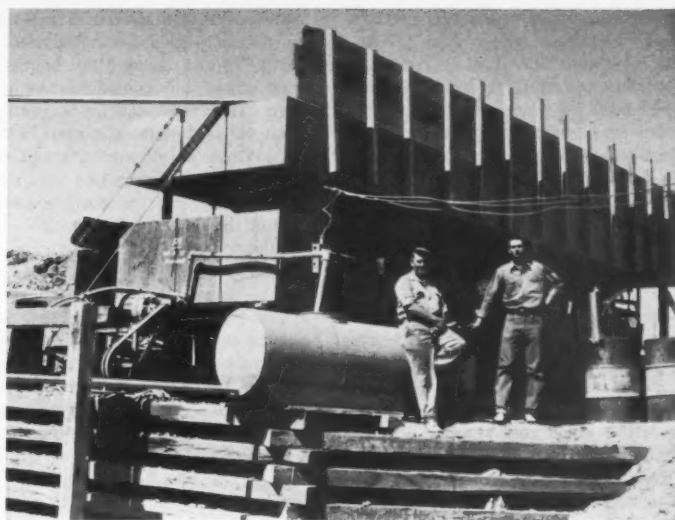
All four bins are positioned directly over a conveyor belt, which can be set to deliver directly to a batch truck, to a truck mixer, or to a concrete mixer nearby. Since each weigh hopper has its own individual set of Winslow beam scales, the plant does not depend on cumulative weighing.

The bin compartments have steel sides, resembling heavy box beams, which are built of welded construc-

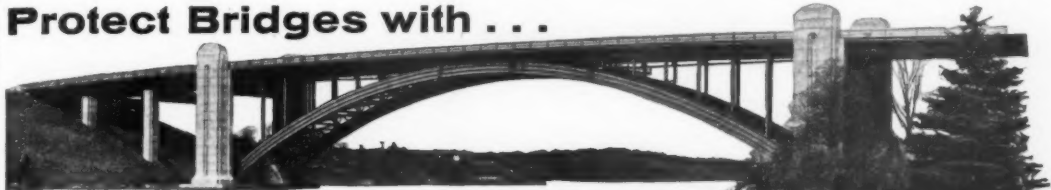
(Concluded on next page)

L. H. Kilgroe, left, with his son James, stands in front of the new portable plant which made a good showing in work on an underjob. The plant is equipped to heat materials for winter work.

Ray Day Photo



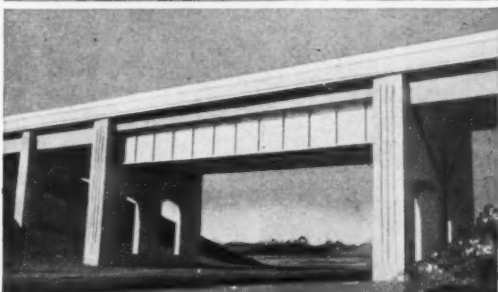
## Protect Bridges with . . .



# FABREEKA... Proven

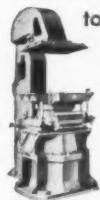
**BY OVER 20 YEARS OF USE ON BRIDGES!**

FABREEKA PADS on bridges distribute loadings evenly and compensate for irregularities of bearing surfaces. They also prevent chipping and flaking of concrete and grout, seal out moisture and dirt, reduce transmission of impact shock, and very substantially cut the labor cost of erection. Bridge building contractors find them more economical and convenient to install. Furnished cut to size with bolt holes as specified, Fabreeka Pads are simply dropped over the anchor bolts; require no painting, and are not affected by weather conditions. They are made of a scientifically designed and manufactured material, have exceptionally high damping qualities, and remain permanently resilient under all service conditions.



## FABREEKA Pads

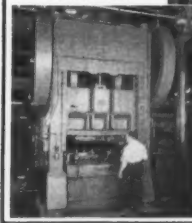
For the Mounting of Heavy Machinery to Protect Foundations and Equipment



Jolt Molder



Heavy Press



Forging Hammer

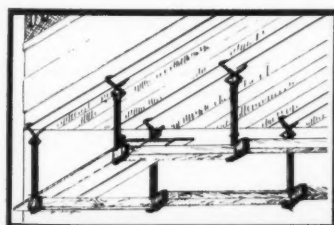
Punch Press

Be sure to investigate the use of Fabreeka on the next Bridge you design or build . . . Write for engineering data on the application of Fabreeka to Bridges and Under Heavy Equipment

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Easily assembled, clap-on suspension scaffolding that is horizontal with the beam for working overhead. Fully adjustable for 10" to 20" L-beam flanges; moves along the beams. Light in weight; interchangeable parts; adjustable for height. SAFE!

Used in sets of 4 or more, scaffold supports 4" x 4" wood beams on which are set platform boards. Saves 1/3 time for most construction, maintenance, painting jobs.

Used by bridge contractors, painters, iron workers, maintenance crews. Write for literature and prices.

Leonard's Scissor Beam Scaffold Mfg. Company COVERT, MICHIGAN, U.S.A.



Pat. pending

(Continued from preceding page)

tion so that the unit is rigid and sturdy. According to Kilgroe, there has been no warping of any of the structural members. The boxed-in space around the bin compartments is used for the storage of 1,400 gallons of mixing water, which is delivered individually to each batch by a pipeline. The plant can accurately weigh out batches up to 12 cubic yards. As far as precision is concerned, it meets specifications of the Colorado Department of Highways and the Bureau of Reclamation, as well as those of private architects in the Denver area.

Since much cold-weather concrete placing is done in Colorado, Kilgroe has arranged the unit for artificial heating. A heater unit burning either propane or butane can be

mounted on the gooseneck part of the frame to keep the mixing water warm. Stored along the boxed-in sides of the bin compartments, the warm water also acts as a heating agent for aggregates and sand in the bins. Winter or summer, the unit requires no special permit to haul over the highway, and one man can take care of the batching operation.

Kilgroe used an Allis-Chalmers HD-5 tractor with a front-end Tracto-Shovel to keep the bins charged on the Breed underpass job, but the plant can be charged by any conventional machine. Even with a ground-level installation, its sides are low enough so that an ordinary front-end loader can keep the bins filled.

The use of long, narrow, slotted openings in the bottom of the bin compartments has proved to be unusually efficient. Even in the cement

bins, material flow is so dependable that no vibration is necessary. The wettest sand passes through the sand compartment without trouble. Kilgroe limited the auxiliary tower on the machine to only one engine, and that is used to operate the conveyor.

#### Mixer Makes Pour

On the underpass job, concrete delivered by the new-type batch plant was dropped into the mixing hopper of a truck mixer, capable of hauling from  $5\frac{1}{2}$  to  $7\frac{1}{2}$  yards as a mixer, and 9 cubic yards as an agitator. Since the batch-plant setup was close to the underpass location, only one truck mixer was necessary. The concrete was transferred to conventional wood forms by a crawler crane and a 1-yard placing bucket.

A unique sideline regarding the job—one which shows what modern

contractors are up against—was the fact that Kilgroe's company paid the premiums on \$3 million worth of liability insurance carried in the name of the Santa Fe Railroad. This insurance, ten times the contract value of the project, was necessary to protect the railroads from any possible damage suit connected with construction. For 90 days, it was necessary to carry trains over an extremely slow 3-15 mph shoo-fly.

THE END

#### Attachments Available for Concrete Slab Finisher

■ A new folder describes the attachments used on the Flex-Plane road-surfacing machine for brooming, belting, and burlap dragging. The automatic self-powered machine can also quickly be converted to suit any final surface finishing specifications. The machine is telescopic and can be easily adjusted for any width slab.

Designed to do concrete-slab finishing economically, the Flex-Plane can be set at a predetermined speed and will follow the paving spread at the prescribed distance unattended. Because the machine rides on forms and is mechanical in operation, it provides a consistently uniform finish once it is adjusted to suit requirements at the beginning of the run.

To obtain Bulletin P-117 write to The Flexible Road Joint Machine Co., Warren, Ohio or use the Request Card at page 18. Circle No. 429.

#### Small Air-Starting Motor

■ A smaller air-starting motor announced by Ingersoll-Rand is designed for starting service on gasoline engines with from 750 to 1,750 cubic inches of displacement and for diesel engines with from 300 to 700-cubic-inch displacement. The new unit incorporates the Ingersoll-Rand Multi-Vane air motor as the power source and is directly connected by a splined shaft to a Bendix drive unit. This design eliminates gears and keeps maintenance needs low.

The new Model 5BM air-starting motor joins the Ingersoll-Rand line that includes the larger Models 9BM and 20BM.

For further information write to Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y., or use the Request Card at page 18. Circle No. 486.



Shown is the Model 848 Intermediate Plant. There is a Barber-Greene Plant to meet the needs of every user, for every capacity, for every type of mix.

# MIX

**MIX** profitably.

**MIX** more tonnage per season. **MIX** to meet all specifications.

**MIX** continuously, with the principle that is inherently automatic.

**MIX** with mechanically interlocked proportioning for the utmost uniformity.

**MIX** with the plant that is truly portable.

Let us show you how a Barber-Greene Plant can reduce your costs.

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789 BERGEN STREET BROOKLYN, N. Y.  
• ST 9-4040 •

CONTRACTORS AND ENGINEERS





### Heavy-Duty Wagon Drill

■ A heavy-duty wagon drill combination, which includes a new drill with a hammer diameter of 4½ inches, has just been announced by Gardner-Denver Co., Quincy, Ill.

The new Model WRM123 has been designed to drill deeper and larger holes faster than the 3½ or 4-inch drills usually used on rock cuts for highways, railways, dams, and other large construction projects. It is designed for handling steel changes of 10 to 12 feet standard.

For further information write to the company, or use the Request Card at page 18. Circle No. 417.

### Extra-Large Blade For Masonry Cutting

■ A king-size diamond blade for cutting brick, tile, concrete, refractory, and other types of hard masonry materials is reported to have a 33 1/3 per cent longer cutting life than standard blades. Offered by Cardinal Engineering Corp., Philadelphia 27, Pa., the new blade is available in 14 and 16-inch sizes. It is made for wet cutting on any standard type of masonry saw.

The manufacturer states that each diamond-bearing segment is individually molded to assure uniformity in the distribution of diamond content. The blade is hardened, tempered, and tensioned at the factory to the requirements of the proper operating speed. Segments will not come off in normal use, it is emphasized.

For further information write to the company, or use the Request Card at page 18. Circle No. 463.

### Heavy-Duty Compressor For Work on Smaller Jobs

■ Features of the 85-cfm Airmaster compressor are pointed out in a bulletin available from Le Roi Division, Westinghouse Air Brake Co., 1706 S. 68th St., Milwaukee 14, Wis.

A cross-section view illustrates the design of the engine-compressor. It shows how the single cooling system, one lubrication system, and one crankcase and crankshaft simplify maintenance requirements. Magneto ignition, replaceable wet-type cylinder sleeves, tight-sealing sides for tool and hose storage, and water-cooled manifold are other design advantages emphasized.

The bulletin also includes specifications, tool capacities, weights, and dimensions. Skid and wheel-mounted units are available.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 492.

MARCH, 1955

### Timber Truss Sources Listed in New Booklet

■ A list of timber fabricators from whom contractors may obtain wood roof trusses is included in the new 1955 edition of the Teco products and services catalog. This is a publication of the Timber Engineering Co., an affiliate of the National Lumber Manufacturers Association.

All of the firms listed are equipped to supply fabricated lumber ready for assembly into roof trusses and Teco trussed rafters. Many of these firms supply the timber connectors and other hardware required for truss assembly, while some provide a com-

plete service that includes engineering design, fabrication, assembly, and erection of finished timber trusses and laminated wood arches.

To obtain this catalog write to Timber Engineering Co., 1319 18th St. N. W., Washington 6, D. C., or use the Request Card at page 18. Circle No. 452.

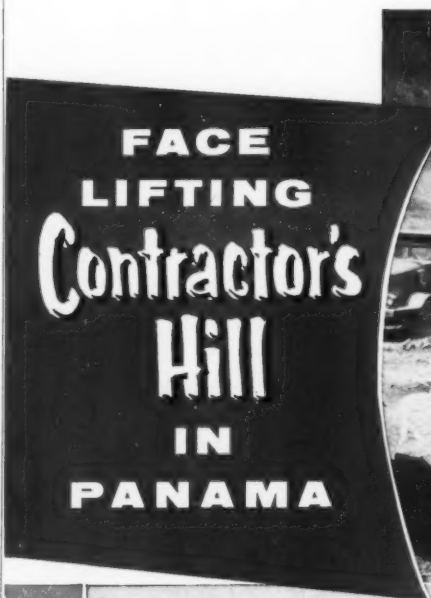
### Treated Envelopes Protect Tools From Rust

■ Tools and machinery parts can be protected against rust with newly-developed chemically-treated coverings made by the Westwill Co., Westport, Conn. Designed for storing

tools that are in frequent use and cannot be properly greased or oiled for protection against rust, the V-Lopes are treated with a chemical compound that gives off a dry rust-preventing vapor. The tool or machinery part is simply slipped into the V-Lope.

The containers are available in several forms. A 9×12-inch envelope holds tools and small parts. A 35-inch sleeve holds saws. A 25-foot roll is available for lining tool-storage spaces.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 510.



Huge rocks are blasted from benches for hauling to the spoil area in 22-ton "Eucs" that are working 20 hours a day to meet the 15 month contract deadline.

Gaillard Cut is the narrowest section of the Canal—Contractor's Hill, at left in this photo, threatens to slide into the channel. It is being benched to shift center of gravity away from the Canal.

## Tecon Corp. picked "Eucs" for this big rock job

When Tecon Corp. was awarded the contract for this 2 million yard face-lifting project, they knew they had an urgent and mighty important job ahead of them. If new fissures in Contractor's Hill caused a slide into the narrow channel at Gaillard Cut, the Panama Canal could be closed to shipping for many months.

To meet the 15 month contract deadline, 8500 yds. of solid rock must be moved every day to a spoil area a mile away. Because of their experience with Euclid equipment on other tough

jobs, Tecon chose Rear-Dump "Eucs" of 22 ton capacity. A fleet of nine machines with 300 h.p. engines and Torqmatic Drives were rushed to the site and are working 20 hours a day.

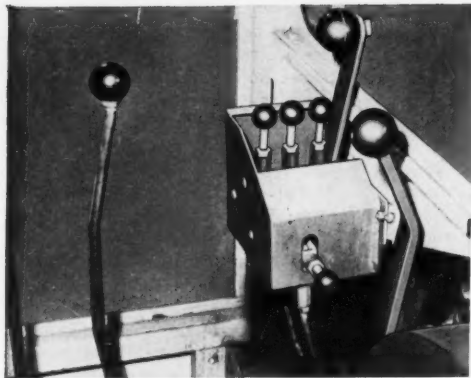
On big jobs like this one, as well as on more routine construction and mining operations, the dependable performance of "Eucs" gets more work done at lower cost per ton or yard. Your nearby Euclid dealer will be glad to provide facts and figures on the complete line of Euclid earth moving equipment.

EUCLID DIVISION GENERAL MOTORS CORPORATION, Cleveland 17, Ohio



# Euclid Equipment





Thew Lorain excavators in the ½ to ¾-yard classes have hydraulic power controls for important crawler operations. The controls use four conveniently located short-throw levers.

### New Excavator Controls Easier to Manipulate

■ Improvements in Lorain excavating machines in the ½ and ¾-yard classes include E-Z action controls which, it is claimed, reduce by 70 per cent the effort required to manipulate the operating levers. The operating levers themselves have been made more slender in appearance and move on roller bearings. In addition, the levers actuate the clutches through a simpler linkage in which the number of parts has been reduced. Easier faster response has also been achieved through the use of 19 antifriction bearings, according to the manufacturer, Thew Shovel Co., Lorain, Ohio.

The company also announces that the hoist and drag-shoe-type clutches on the excavators have been redesigned. They now have an improved dead-end linkage that eliminates all adjustment at the dead end of the shoe, and a new spring-loaded live end which not only reduces operating effort, but also reduces adjustment frequency.

Crawler-mounted machines in Thew-Lorain's ½ and ¾-yard classes are equipped with hydraulic power controls. These controls are used for crawler operations including engagement and release of the turntable swing lock to hold the turntable against side motion during travel. They also control release of the tread locking pawls, shifting of jaw clutches for selection of swing or travel, and steering of the crawler tracks. All these operations may be effected with the turntable in any position of swing relative to the crawler through the use of four short-throw plastic-knob levers mounted in a manifold to the right of the operator.

For further information write to the company, or use the Request Card at page 18. Circle No. 435.

### Pressure-Treated Posts For Use on Highways

■ The use of pressure-treated highway posts is discussed in a brochure from the Wood Preserving Division of Koppers Co., Inc., Koppers Bldg., Pittsburgh 19, Pa. The literature contains facts concerning installation, maintenance, and length of service of pressure-treated highway posts. It also includes a description of the method of treatment used on these posts.

Comparative cost data based on actual service histories from various state highway departments is included.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 451.

### Metal-Cutting Torches And Welding Equipment

■ The products and services of the various divisions of Air Reduction Co., Inc., are covered in a new booklet released by the company. Among products listed of direct interest to contractors are oxygen, acetylene, and the necessary apparatus and accessories for oxyacetylene cutting and welding. The company also offers electric arc-welding and inert-gas shielded-arc welding equipment.

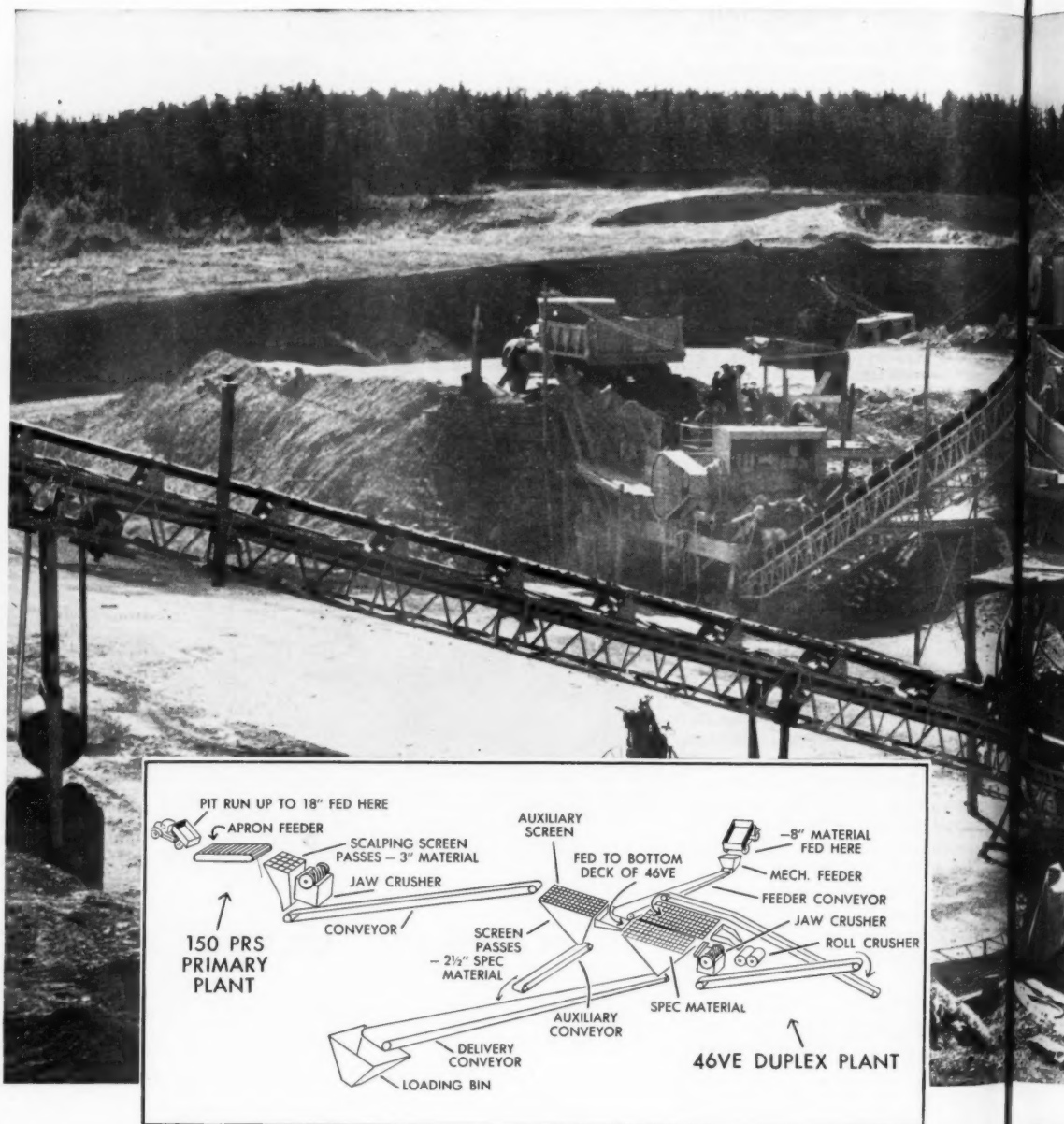
To obtain this literature write to Air Reduction Co., Inc., 60 E. 42nd

St., New York 17, N. Y., or use the Request Card at page 18. Circle No. 513.

### Dodge Assigns Manager

Elmer W. Engel has been appointed superintendent of the Dodge main plant by Dodge Job-Rated Trucks, division of the Chrysler Corp., Detroit, Mich.

A member of the Dodge organization since 1925, Mr. Engel was assistant planning superintendent at the main plant prior to his present appointment.



## Portable crushing setup produces 5000 tons per day under freak pit conditions

● 5,000 tons is a lot of 2½" material to produce in a 10 hour day. And when you have to crush approximately half of it, you've got a job on your hands.

This was the task confronting Dexter Construction Company, which had contracted to supply material for all the roads at Canada's largest Army Base, located at Gagetown, New Brunswick.

**Contractor finds freak pit conditions**  
Dexter found that half their pit consisted of material ranging from sand

to 8" rock. This was swell, but to their dismay, they discovered that the other half contained a high percentage of 15" to 18" boulders. These could not be crushed with Dexter's presently owned equipment, yet in order to maintain road building schedules, all pit material had to be used. The problem was how to obtain the fastest, most economical production.

#### How the problem was solved

Dexter overcame this threatened production bottleneck by installing two

portable crushing plants. One, a PIONEER Model 150 PRS Primary plant handles material from the part of the pit which contains the boulders.

The other, a big PIONEER 46VE diesel-electric Bottom Deck Feed plant, takes the 8" maximum material from the remainder of the pit and at the same time, serves as a secondary plant for the 150 PRS.

By an ingenious arrangement of materials flow, output of both plants is delivered to a common loading point via the same 36" x 105'

CONTRACTORS AND ENGINEERS



## Tractor-Loader Features Improved Transmission

■ The newest addition to the Payloader tractor-shovel line is the Model HFC, a unit with a 1-cubic-yard payload. Measured struck, the loader's capacity is  $\frac{3}{4}$  cubic yard. The new machine is a rear-wheel-drive model and features a special new Hough-built transmission and a torque-converter drive.

The new transmission is of the full-reversing type. It provides four forward and four reverse speeds ranging up to 28 mph. An important fea-



The new Model HFC Hough Payloader features an improved transmission and a torque-converter drive.

ture is that parts for the transmission are interchangeable to the degree that it is unnecessary to stock matched sets of replacement parts.

The torque converter is of the self-cooled three-element type. It offers the advantages of a reduction in gear-shifting and clutching. This in turn

means faster work cycles, sustained high output, and less operator fatigue.

For further information on the new Model HFC or any of six other models available write to Frank G. Hough Co., 762 Seventh St., Libertyville, Ill., or use the Request Card at page 18. Circle No. 541.

## Useful Application Data On Portland Cements

■ Detailed information on the uses, applications, and specifications of portland cements, waterprooings, and tile grout cement is available in a new booklet from Medusa Portland Cement Co., 1000 Midland Bldg., Cleveland 15, Ohio. The booklet contains data on various types of portland cement such as gray, white, waterproofed, air-entraining, and high-early-strength, as well as mortar cements.

Specific data tells when Medusa's nine different job-fitted portland cements, as well as waterproofing paste, waterproofing powder, and white tile grout cement may be used. Tables in the manual are intended to help the contractor figure out quantities of cement and aggregates required for various types of work.

For further information write to the company, or use the Request Card at page 18. Circle No. 453.

## Engines Improved With Ventilation Feature

■ Positive crankcase ventilation is now a feature of the Willys 4 and 6-cylinder Power Giant industrial engines. The engines were recently introduced for construction machinery applications.

Positive crankcase ventilation makes internal air circulation independent of the engine's physical motion relative to the external atmosphere. The ventilation used by Willys automatically regulates internal air flow to the engine speed. Air is pulled in through the air filter to remove all harmful dust and dirt particles that would normally cause oil sludge, the manufacturer explains. It passes into the oil filler tube and circulates freely within the engine block removing all thinning or acid-forming condensates.

For further information write to Industrial Engine Department, Willys Motors, Inc., 1015 N. Cove Blvd., Toledo, Ohio, or use the Request Card at page 18. Circle No. 415.

## Wrought-Iron Products For Highway Construction

■ In a new booklet just released, the A. M. Byers Co., Clark Bldg., Pittsburgh, Pa., has compiled photographs showing typical uses of wrought-iron pipe and plate in the construction of roads and bridges.

Highway installations pictured in the booklet include electrical conduit, drainage lines, and radiant-heated toll booths. Snow-melting systems on hills and curves of conventional roads and on the ramps of Boston's new Aerial Highway are also shown. Representative bridge applications illustrated include downspouts, bridge decks and railings, lamp posts, and pier protection and blast plates.

To obtain this literature write to the A. M. Byers Co., Clark Bldg., Pittsburgh, Pa., or use the Request Card at page 18. Circle No. 501.



### PIONEER Conveyor.

Working in conjunction, these two plants utilize all pit material and produce the necessary 5,000 tons in a 10 hour day.

### Why the 150 PRS was chosen

After careful study, Dexter picked the 150 PRS for the job because its scalping screen and big 2036 jaw crusher enables it to handle large rock and at the same time, maintain unusually high output. The two-deck screen located ahead of the jaw crusher, removes material under 3" so that the jaw handles only rock needing primary crushing.

### How these plants team up

Crushed material from the jaw in the 150 PRS primary plant, plus the by-passed materials, are separated and

sized by a 5 x 12 two-deck auxiliary screen located between the two plants. Specification material is removed here and conveyed to the loading bin.

Material in need of further processing is then fed to the bottom deck of the 46VE along with pit run material containing the 8" maximum rock.

### How Bottom Deck Feed works

With bottom deck feed, specification sizes are immediately removed. Oversize goes to the jaw crusher, then to the top deck where specification sizes are again removed. Oversize from the top deck is sent to the roll crusher for final reduction. This exclusive Bottom Deck Feed feature provides twice the effective screen area and thereby increases output. In addition,

the operator can easily equalize loads carried by the roll and jaw crusher, while the plant is operating, thus always keeping the plant at peak crushing capacity regardless of changes in size of materials. This feature also permits closer gradation control.

For information on PIONEER's new Model 150 PRS Plant and 7 different sized Bottom Deck Feed Plants, write Pioneer Engineering Works, Inc., Minneapolis 13, Minnesota (a subsidiary of Poor & Company, Chicago).

**Pioneer**  
Continufluo EQUIPMENT

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EERS

MARCH, 1955

## AVOID LEGAL PITFALLS

### Test-Hole Driller Liable for Mistake

**THE PROBLEM:** Intending to erect a two-story building, plaintiff purchased a site on defendant driller's assurance that there was fill to no greater depth than 16 inches below the surface. (A local ordinance required that foundations extend 18 inches below undisturbed natural ground surface.) The building contract specified that if there was fill below 16 inches, the contractor

would be paid extra. Excavation for the first foundation showed that there were areas with from 3 to 6 feet of fill below the 16-inch level. (1) Was the driller liable in damages? (2) Was he liable for the increased cost of the foundation?

**THE ANSWERS:** (1) Yes. (2) No. (*Gagne v. Bertran*, 275 Pac. 2d 15, decided by the California Supreme Court.)

All seven of the justices of the Supreme Court agreed that the defend-

ant was liable for some damages because he had professed to be an expert in soil testing and had not carefully discharged his undertaking to test the particular site for which the plaintiff had specially employed him. It was on the strength of his report that plaintiff had bought the land.

The trial court had awarded damages to plaintiff measured by the extra cost plaintiff had to pay the building contractor. On appeal, two of the seven justices approved that decision. But the other five justices swung the court's decision, to the effect that the measure of damages was the amount which the plaintiff paid for the land in excess of its value plus the reasonable cost of the building in excess of its value.

The two conflicting opinions will be of but little practical interest to con-

tractors except to show that measuring the dollar liability of a test-hole driller who has negligently performed a test is a problem that is still up in the judicial "air." But the case will serve to demonstrate to test-hole drillers that, while they are not required to be infallible in performing their undertakings, they must run risks of liability if they fail to use that degree of care and skill as is reasonably to be expected of them as experts in their field.

Incidentally, it is to be noted that the driller's mistake was discovered before construction had begun, and building plans could have been altered to meet soil conditions.

### Autos Collide on One Lane While Other Was Closed

**THE PROBLEM:** One evening a north-bound and a south-bound automobile collided in the east lane of a divided street, the west lane being closed for improvements. Were the city, the general contractor, and subcontractors jointly liable in damages on the ground that the city was liable for not maintaining proper control over two-way travel in a lane normally used for one way traffic, and that the general contractor was liable to the injured parties because he had contracted with the city to maintain proper warning signs, and that the subcontractors were liable because they had closed the west lane without any warning to motorists of danger in using the east lane?

**THE ANSWER:** Yes. (*City of Austin v. Schmedes*, 270 S. W. 2d 442, decided by the Texas Court of Civil Appeals, Austin.)

### Bond to Pay for Labor And Materials on Road

**THE PROBLEM:** (1) Does a road contractor or subcontractor's bond to pay for labor, materials, and supplies used in highway repair, construction, or improvement cover items that ordinarily would not be lienable against private structures? (2) Could the furnishing of materials for a particular job be shown circumstantially, as well as by explicit evidence?

**THE ANSWERS:** (1) Yes. (2) Yes. (*State v. H. & K. Construction Co.*, 274 Pac. 2d 1002, decided by the Idaho Supreme Court.)

Such a bond, the court said, should be read as covering all labor or materials that directly or indirectly contribute to the work. It should include repairs, parts, hardware, gas, oil, servicing, labor, and other similar items, but not tools or new equipment, except those actually consumed on the job.

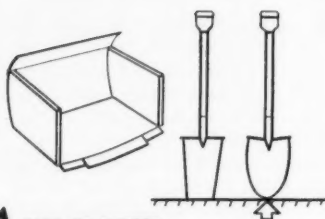
### Arbitration Clauses

**THE PROBLEM:** A school-building contract contained a standard form provision to the effect that the supervising architect should decide all claims relating to the work and interpretation of the contract documents, subject to arbitration before resort to litigation. Did this cover disputes as to whether certain work constituted an extra, and if so, did it cover the reasonable value of the work?

**THE ANSWER:** Yes. (*Application of Board of Education, Union Free School District*, 129 N. Y. Supp. 2d 344, decided by the New York Supreme Court, Appellate Division, Second Department.)

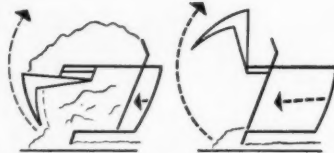
## 5 BIG REASONS WHY ALLIS-CHALMERS SCRAPERS move more dirt at lower cost

Check over these pull scraper features point by point. See for yourself how performance makes dollars when design makes sense.



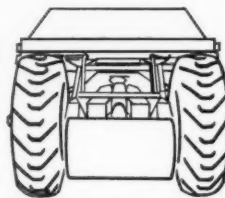
### 1 DIGS IN FASTER

The penetrating ability of a round-end spade helps illustrate how the curved and offset cutting edge on Allis-Chalmers scrapers concentrates all the tractor horsepower on the center section during initial penetration.



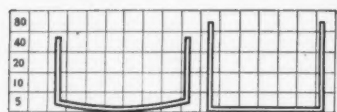
### 4 POSITIVE EJECTION ASSURES EVEN SPREADING

With patented linkage, apron lifts, then moves forward and up as ejector pushes forward. High apron lift prevents any possibility of material's jamming. Anything that can be put into the bowl can be easily ejected.



### 5 HAULS, MANEUVERS EASILY

The extra wide, low bowl keeps center of gravity low, helps the scraper hug the ground for safety. Front running gear has ample clearance at all points. The two-to-three feet shorter wheel base permits easier maneuvering. Scraper can turn in its own length.



### 2 LESS LOADING RESISTANCE

Low, wide bowl plays an important part in ease of loading. Since loading resistance is largely determined by the height to which the load is built, the lower, wider bowl of an Allis-Chalmers scraper requires less time and power to get the same yardage as other scrapers.



### 3 HEAPS AUTOMATICALLY

The combination of slightly deeper center cut and correctly angled cutting edge shapes the load as the scraper fills. The greater volume of dirt flowing into the center of the curved bowl "boils" forward, to the rear and to the sides, pulverizing the dirt, filling the voids and producing an automatically heaped load without excessive spillage.



**INTRODUCING THE AC-108...** newest scraper in the Allis-Chalmers line—shown here with an Allis-Chalmers HD-15 Tractor. Has 8.4 struck capacity (11 yd heaped). Incorporates all of the big-yardage features found in the other Allis-Chalmers scrapers, 2 to 18 yds heaped capacities.

**ALLIS-CHALMERS**  
TRACTOR DIVISION — MILWAUKEE 1, U. S. A.





## WORTHINGTON ANNOUNCES THE NEW *BLUE BRUTE* ROTARY

FIRST PORTABLE COMPRESSOR WITH ALL THE FEATURES YOU NEED

# WORTHINGTON

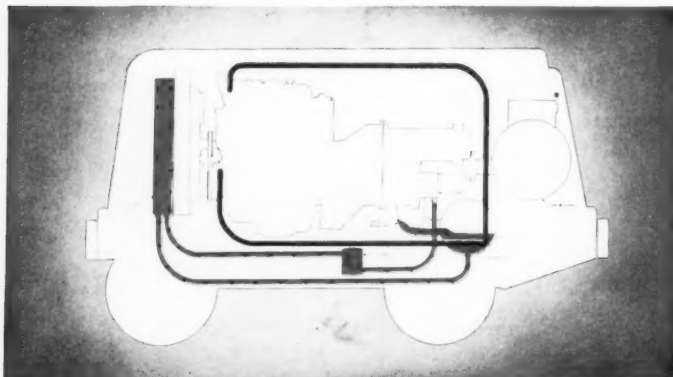


# 3 new *BLUE BRUTE* exclusive deliver reliable air power

You wanted easier starts — less wear and tear

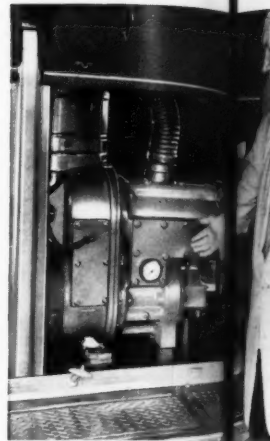


So we gave you a *clutch* — an easy-acting, reliable clutch that lets you warm up the engine *before* you engage the compressor. A Worthington patented interlocking control permits us to give you all the advantages of a clutch which assures constant safe operation.

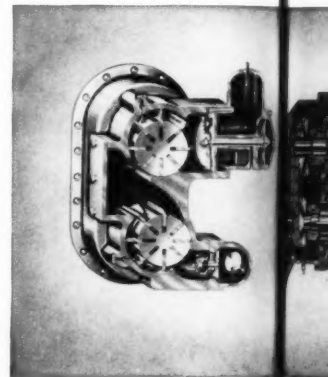


**Diagram shows** how hot water (blue) from engine jacket heats compressor oil (red) before engaging the compressor. The disc type, heavy duty, hydraulically-operated clutch assures vibrationless operation at all times—at all speeds. The clutch accommodates minor misalignment should it occur and acts as a "safety connection" between the engine and the compressor.

You wanted a self-draining cylinder



So we gave you a unique cylinder design which prevents oil from accumulating during shut down. Oil cannot seep into the cylinder, thus preventing an excess accumulation damaging the cylinder starts.



**See how** the self-draining cylinder design prevents oil from accumulating in any low area of the cylinder, thus preventing an excess accumulation damaging the cylinder starts. Also shown is flow path of oil from the cylinder into the bearings and chain oiler.

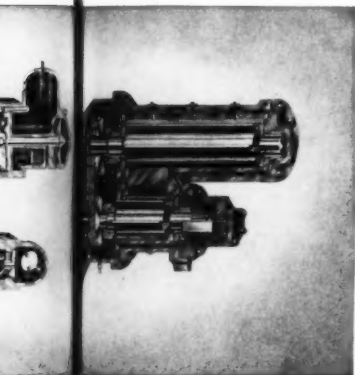


# uses r power

ted a s...ining compressor



que cylinder ment with full gravity-draining of oil  
cannot see cylinder and there is no danger of  
damaging starts.



aining cylinder oil accumulation. Oil cannot  
area of inter-stage chamber, or discharge  
low path of heavy duty gear pump to four roller  
er.

Now Worthington brings you the first portable rotary compressor that has all the features you need.

Many months ago we asked contractors around the country exactly what they wanted in a rotary compressor. Then we designed those features into a modern, streamlined, power-packed machine.

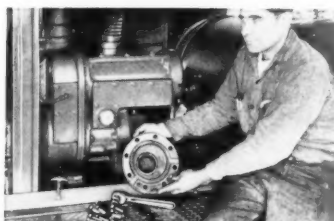
Next, we asked a number of contractors to "give it the business"—to run it on their toughest jobs, to prove out every construction feature.

Finally, the Blue Brute came through these grueling on-the-job tests with performance to spare. And now it's ready for you with all the features you've told us you want. Here are the three most important ones:

## You wanted accessibility and simplicity

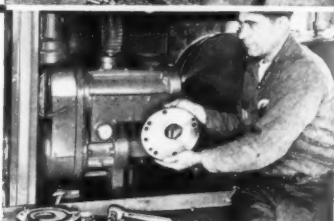


So we gave you a design that allows inspection without dismantling the entire compressor. In this new Blue Brute, an entire set of blades could be replaced in 40 minutes if it were necessary—and right on the job, without a single special tool.

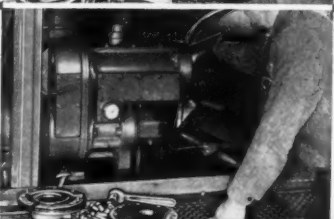


PHOTOS TELL HOW-TO STORY  
of speedy blade removal.

1. Take out machine bolts and remove bearing cap...with needle bearing in place.



2. End plate is removed without disturbing inter-bearing race on rotor shaft.



3. Rotor blades separate for inspection or removal. That's all there is to it!

## And look at these other new *BLUE BRUTE* features

|   |   |   |
|---|---|---|
| <p>Diesel Power Units—<br/>General Motors Diesel<br/>Gasoline Power Units—<br/>Continental Motors</p> | <p>Separate oil storage tank<br/>and air receiver—for bet-<br/>ter oil control and larger<br/>air storage capacity.</p> | <p>Functional modern housing<br/>—for on-the-job ruggedness,<br/>clean appearance, and ac-<br/>cessibility.</p> |
|---|---|---|

|  |  |   |
|--|--|---|
| <p>Low-set fuel tank—<br/>for safety and easier<br/>filling.</p> | <p>Two-stage oil separation with<br/>vortex chamber in oil tank and<br/>removable filter in air receiver—<br/>for oil-free air delivery.</p> | <p>Simple, automatic mech-<br/>anisms—to avoid down-<br/>time through operator error.</p> |
|--|--|---|

See the new *BLUE BRUTE* Rotary at your Worthington distributor now

He's ready to demonstrate to you *all* these features that make the Blue Brute your best portable compressor buy.

You'll find that the brilliant performance of the Blue Brute is matched by your Worthing-

ton distributor's ability to serve you—whether for sales, service, or rental. He's got a complete parts stock, too. Call on him today—he'll be glad to help you select the right Blue Brute for your requirements.

H.4.8

Printed in U.S.A.

# WORTHINGTON



GENERAL OFFICES: HARRISON, NEW JERSEY



## Edited by A. L. H. STREET Attorney-at-Law

These brief extracts of court decisions may aid you. Local ordinances or state laws may alter conditions in your community. If in doubt consult your own attorney.

### Federal Labor Law

**THE PROBLEM:** Defendant maintained in Tennessee a plant for manufacturing asphalt products from materials shipped into the state. These products were used in that state for maintaining and reconstructing highways over which interstate motor carriers operated. Were the defendant's clerks, watchmen, truck drivers, pump men, and laborers "engaged in interstate commerce and in the production of goods for interstate commerce," and therefore entitled to the benefits of the wage and hours provisions of the federal Fair Labor Standards Act?

**THE ANSWER:** Yes. (Mitchell v. Emulsified Asphalt Products Co., 120 Fed. Supp. 804, decided by the United States District Court, Eastern District of Tennessee.)

### Road Construction— Accident on By-Pass

**THE PROBLEM:** A road contractor permitted a tree-stump to remain on the edge of a by-pass where construction was in progress. Dust concealed it and a motorist was fatally injured when her car, driven with reasonable care, collided with the stump. Was the contractor liable?

**THE ANSWER:** Yes. (Briscoe v. Worley, 1953, 253 Pac. 2d 145. Oklahoma Supreme Court.)

The court said that the duty of the contractor to use due care for the safety of motorists rightfully using the by-pass was not restricted by contract specifications, concerning the contractor's duty to maintain a traffic way along the job site; the specifications being binding only as between him and the state.

### Deposit Did Not Measure Damages

**THE PROBLEM:** A contract to demolish and remove a government building provided that the 10 per cent deposit made by the successful bidder should be retained by the government and be subject to forfeiture on the contractor's failure to perform his contract. Did that limit the amount for which the contractor could be held liable for breach of the contract?

**THE ANSWER:** No. (Steffen v. United States, 213 Fed. 2d 266, decided by the United States Court of Appeals, Sixth Circuit.)

The ground of the decision is as follows: A contract specifying a sum that is to be paid as damages in case of a breach—technically known in law as "liquidated damages"—will not be enforced if the actual amount of damages can be computed. Such a provision will be given effect only where actual damages are not subject to computation and where the amount fixed has some reasonable relationship to the probable damage. In this case, the actual damages could be approximated, and if they exceeded the amount of the deposit, the de-

posit would merely be credited in favor of the government against the damages allowable.

(By the same token, it would seem that if the actual damages were less than the amount of the deposit, the contractor would have been entitled to a refund of the excess.)

### Workmen's Compensation Ruled Employer Expense

**THE PROBLEM:** In Ohio, as in other states, an employer may be required to pay workmen's compensation for injury to an employee in the course of his employment, even though the injury might have been caused by a third party's negligence. Such liability has the effect of increasing the amount of premiums payable by the employer for compensation insurance. Is the third party bound to reimburse the employer

against this increased expense?

**THE ANSWER:** No. (Decker Construction Co. v. Mathis, 122 N. E. 2d 38, decided by the Ohio Court of Common Pleas, Franklin County—Columbus.)

The decision rests upon a decision by the Ohio Supreme Court to the effect that the employer is not entitled to reimbursement whether he be a self-insurer who contributes to a state insurance fund or one who simply carries ordinary liability insurance.

### Bids Weren't Required

**THE PROBLEM:** The Denver charter required letting to the lowest responsible bidder "contracts for local improvements and all other contracts involving expenditures under direction of" a public-works board. Read in con-

nection with other provisions of the charter, was competition in the award of a contract for purely architectural services required?

**THE ANSWER:** No. (McNichols v. City and County of Denver, 274 Pac. 2d 317, decided by the Colorado Supreme Court.)

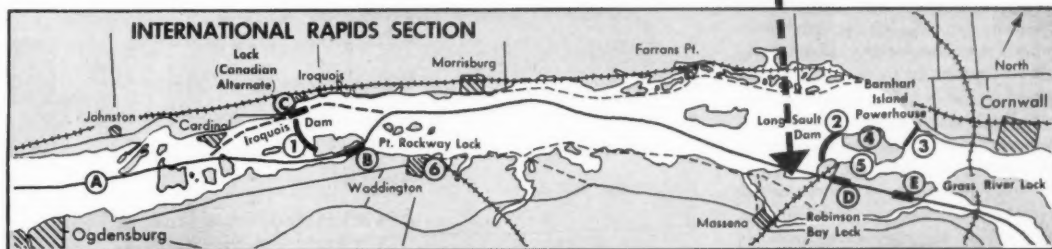
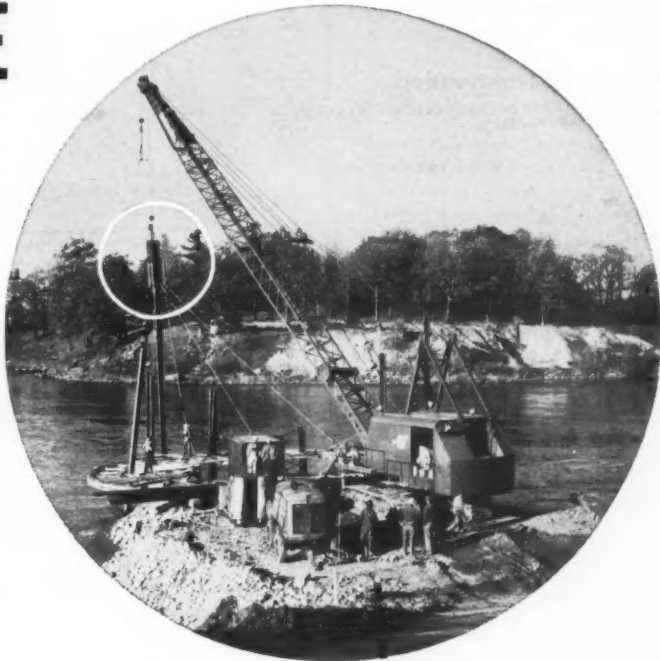
The court approvingly noted that a Texas appellate court had said that it would be unreasonable to suppose that all architects and engineers possess equal skill, knowledge, training, and efficiency. To award a contract to the lowest bidder would tend toward securing the services of the least competent man.

States in which the appellate courts have decided that architects need not be employed under competitive bidding on public work include California, Indiana, Massachusetts,

(Concluded on next page)

# ST. LAWRENCE POWER PROJECT

started with blows by a  
**McKIERNAN-TERRY**  
Pile Hammer



By 1959, the St. Lawrence River, between Ogdensburg and Massena, N. Y., will be delivering more than 12½ billion kilowatt-hours of electric energy per year by means of hydro-electric plants served by 3 dams.

The first major contract for this huge undertaking was started by Dravo Corporation at the foot of Long Sault Island near Massena late in 1954. As the first step in diverting the south channel of the river to permit building one of the dams, a McKiernan-Terry 9B3 Double-Acting Hammer was used to set the initial piling for a cofferdam.

Here, as in many thousands of large and small projects all over the world—wherever stabilization is required for foundations—the contractor selected McKiernan-Terry Pile Hammers to speed the work and help assure a creditable, profitable job.

**McKIERNAN-TERRY CORPORATION**  
Manufacturing Engineers

19 Park Row, New York 38, N. Y. • Plants: Harrison, N. J. and Dover, N. J.



# McKIERNAN TERRY

Also Manufacturers of Coal and  
Ore Unloaders and Bridges,  
Grab Buckets, and Special Machinery

MC-204

(Continued from preceding page)  
Minnesota, New York, North Dakota,  
Ohio, Pennsylvania, and Texas.

### Experienced Contractor As Expert Witness

**THE PROBLEM:** A witness at a court trial had 20 years experience as a sewer and drain contractor. Did the fact that he was not an engineer and had no college education disqualify him to testify as an expert on the question of whether a sewer had been negligently constructed?

**THE ANSWER:** No. (Cahill v. Mayor, Etc., of Baltimore, 48 Atl. 705, decided by the Maryland Court of Appeals.)

This decision was not essential to disposal of the particular case, which involved damaging of plaintiff's property through a diversion of the natural course of surface drainage in the construction of a municipal drain. Whether or not the work was done carefully had no bearing on the city's liability.

### Watchman Not Needed On Road Construction

**THE PROBLEM:** A road contractor's dump truck collided with an automobile near the work site. The accident occurred at midday, and the motorist was aware of the work that was being carried on. In the subsequent suit for damages, did the trial judge err in telling the jury that the contractor was negligent in not maintaining a watchman where the accident occurred?

**THE ANSWER:** Yes. (Harris v. White Construction Co., 82 S. E. 2d 689, decided by the North Carolina Supreme Court.)

The decision was affected by the fact that there was ample space at the place of the accident for the two vehicles to pass safely.

### Pedestrian Injured by Fall Into Street Trench

**THE PROBLEM:** In moving a concrete gutter farther into street limits around a housing project, defendant, a street-improvement contractor, temporarily left a trench about three feet wide and twelve inches deep. A housewife, who had previously and frequently crossed the trench safely, fell and was injured when she stepped close to one edge of the trench and it crumbled under her weight. The accident occurred in daylight. Was the contractor liable in damages?

**THE ANSWER:** No. (Lee v. Sievers, 271 Pac. 2d 699, decided by the Washington Supreme Court.)

In approving dismissal of the injured woman's suit for damages, the court reasoned that the trench presented only a slight hazard.

### Rights of Surety

**THE PROBLEM:** A school-building contractor assigned to the surety on the performance bond all money that should be due the contractor at the time of a breach of the bond to reimburse the surety against liability on the bond. (1) Was it necessary that the surety notify the school district in order to perfect the assignment? (2) Did the surety have prior rights against the funds due the contractor over a bank which took a later assignment from the contractor to cover loans, although the bank notified the district

of its assignment before the surety gave notice of its assignment?

**THE ANSWERS:** (1) No. (2) Yes. (American Employers Insurance Co. v. School District, Town of Newport, 107 Atl. 2d 684, decided by the New Hampshire Supreme Court.)

The court decided that the surety was entitled to money due on the contract to reimburse it for the cost of completing the building after the contractor defaulted in performance.

### Court Upholds Right To Correct Contract

**THE PROBLEM:** A representative of the prime contractor on a municipal-airport project and a subcontractor negotiated orally for furnishing by the latter of asphalt concrete, agreeing on a price of \$1 per square yard. The representative reported the agreement

to the prime contractor as calling for \$10 per ton, and a written contract was accordingly prepared and signed. Was the subcontractor entitled to a court order declaring that he was entitled to be paid on the yardage basis?

**THE ANSWER:** Yes. (Smith v. Githens, 271 S. W. 2d 374, decided by the Springfield, Mo., Court of Appeals.)

The court said that parties to a contract are ordinarily bound to read it before signing and run risks in failing to do so. But if through fraud of one of the parties, the other is induced to sign a paper that does not state the true agreement, or if through mutual mistake—as in this case—the paper fails to do so, the courts will revamp the contract so as to call for performance of the terms actually agreed upon.

The court also said where the parties discover miswording of an agree-

ment they can remedy it themselves, without court proceedings, by signing a modified agreement.

### Saturday Overtime

**THE PROBLEM:** A brickwork subcontract on a housing project specified that it was based on a six-day work week and that the job must be completed by a fixed date. Did the contract imply that the subcontractor would be required to pay double time for Saturday work, and so entitle the prime contractor to reduce the contract price by the amount the subcontractor saved by not working his crew on Saturdays?

**THE ANSWER:** No. (John B. Kelly, Inc. v. Aronimink Village Apartments, Inc., 122 Fed. Supp. 905 decided by the United States District Court, Eastern District of Pennsylvania.)

THE END

## Best bet for better bids—

# SPECIFY

## GENERAL MOTORS DIESEL POWER

*in all your construction equipment*

You can specify General Motors Diesel power in over 750 different models of equipment built by over 150 manufacturers.

When you do you'll get fast-acting, quick-accelerating 2-cycle Diesel power that will help you do more work, faster, at less cost.

More work, because a General Motors Diesel is a "high torque" engine. And torque—as much as developed horsepower—measures an engine's working ability.

Faster work, because a GM 2-cycle Diesel, with its responsive governor, efficient fuel injectors and power at every piston downstroke, gives you instant pickup in response to changing loads.

Less cost, because a General Motors Diesel burns fewer gallons of safer, cheaper fuel. Also a GM Diesel costs less to buy and the parts cost less than for other Diesels of comparable ratings.

No matter where your contracts take you, you'll find GM Diesel distributors ready to supply fast service and quick delivery of low-cost factory parts. Check your local distributor today for full details on dependable, low-cost Diesel power for your equipment, or write direct for more information.



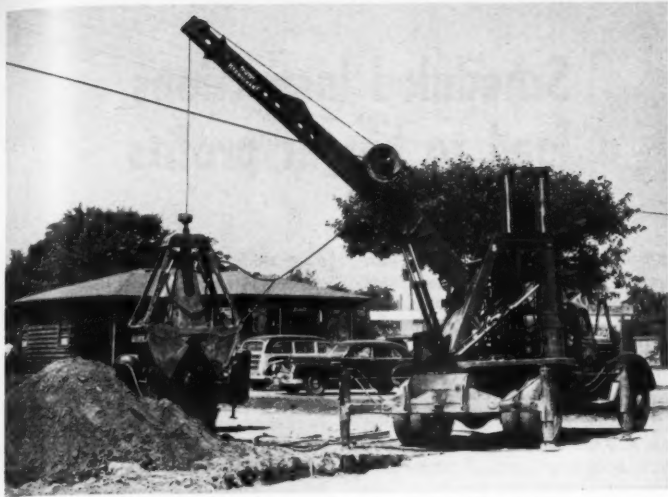
### PURCHASED 23 GM DIESELS SINCE 1947

This LeTourneau-Westinghouse Tournapull is part of an earth-moving fleet used by the Lone Star Steel Company of Lone Star, Texas. The Company, one of the largest producers of steel in the Southwest, has been a consistent user of General Motors 2-cycle Diesel engines in several different kinds of earth-moving, construction and mining equipment for better than seven years.



CONTRACTORS AND ENGINEERS





A new clamshell bucket has increased the digging output of the H-3 Hydrocrane. ▶

### Truck-Mounted Excavator Gets Dual-Ram Bucket

■ The Bucyrus-Erie hydraulic Model H-3 Hydrocrane now has a new  $\frac{3}{4}$ -yard clamshell bucket controlled by two hydraulically operated rams instead of a single center ram. The manufacturer reports that the twin rams, together with generally-improved leverage, provide 42 per cent more force to the lips of the bucket than was available in the earlier model. Struck-measured capacity of the new bucket is 10.4 cubic feet.

The rams are attached directly to the upper edge of the bowl sections and do not extend into the bucket to interfere with loading. The bowl sections are curved to provide maximum penetration and quick loading with minimum heeling. In addition, the bowl pivot shafts have been replaced

with short pins so that there is nothing to obstruct loads in the bucket.

For further information write to Bucyrus-Erie Co., South Milwaukee, Wis., or use the Request Card at page 18. Circle No. 447.

### Versatile Scaffolding For Light-Duty Work

■ A new steel scaffold that provides platform heights up to 12 feet is announced by Safway Steel Products, Inc., 6234 W. State St., Milwaukee 13, Wis. Permitting work as high as 18 to 20 feet, this light-duty equipment is practical for outdoor or indoor use.

The new scaffolding comes in a package consisting of three rectangular 6-foot frames, three tapered 6-foot frames, three platform brackets, six rubber safety shoes, and four pivoted cross-braces. It can be assembled in five different forms.

For further information write to the company, or use the Request Card at page 18. Circle No. 437.

### Vitrified Clay Pipe In Extra-Long Sizes

■ Vitrified clay pipe in extra-long sizes is announced by the Logan Clay Products Co., Logan, Ohio. The new and longer pipe is available in 3, 4, and 5-foot lengths in slip-joint or regular bell-and-spigot types.

Five-foot lengths that eliminate two joints every 10 feet are being manufactured currently in 18, 21, and 24-inch diameters in both standard and extra strength. Four-foot lengths are available in 8 through 30-inch diameters, and 3-foot lengths in 4 to 6-inch building-sewer sizes.

For further information write to the company, or use the Request Card at page 18. Circle No. 507.

### Precast and Prestressed Floor and Roof Slabs

■ The precast, prestressed, long-span slabs that make up the Flexicore floor and roof-building system are described in a new booklet. The literature outlines properties and uses of the monolithic slabs, diagrams basic structural and mechanical details, and describes erection procedure.

A new 3-core 6×16-inch slab (not yet available in all manufacturing areas) is described, along with the 2-core 6×12-inch, 6 $\frac{1}{2}$ ×12-inch, and 8×16-inch sizes. Flexicore slabs are prefabricated to order in lengths with 1-inch increments up to 22 feet 6 inches or 26 feet 8 inches. In some areas, longer lengths may be ordered.

To obtain this literature write to Flexicore Co., Inc., 1932 E. Monument Ave., Dayton 1, Ohio, or use the Request Card at page 18. Circle No. 473.

### List of Hose Abuses

■ An 11-point check list available from the Thermoid Co., 400 Whitehead Road, Trenton 6, N. J., illustrates common abuses of industrial rubber hose. The chart presents a series of basic rules to follow for longer and better hose performance. Made of stiff cardboard, the chart can be mounted in areas where hose is used, as a reminder against abuse.

To obtain this chart write to the company, or use the Request Card at page 18. Circle No. 485.



### SAVING \$170.00 A MONTH IN FUEL ALONE

United Construction Company cut fuel costs over 60% and reduced maintenance costs when they switched from gasoline to GM Diesel power on their Moretrench pumps. The GM Diesels worked 24 hours a day, 7 days a week—eliminated stops formerly required to pull and service spark plugs every three days and to replace them every three weeks.



### 13,000 HOURS—NO REPAIRS

General Contractor A. H. Famularo bought this GM Diesel-powered Northwest 25 Crane in April 1947. In 13,000 hours he never had an injector out, never touched the head or pan. He burns 16 gallons of low-cost Diesel fuel in 8 hours—specified GM Diesel power "because it was economical . . . and has proved to be reliable."



### 25% MORE WORK; FUEL COSTS $\frac{1}{3}$ LESS

Killough Construction Company has standardized on GM Diesel power for their portable rock crushing plant in Kansas. The firm uses six GM Diesels to run a hammer mill, operate conveyors and screens, a primary crusher and two shovels. One shovel, converted from gasoline to GM Diesel power, now does 25% more work on one-third less fuel cost.



### "WONDERFUL PERFORMER"

This GM Diesel-powered scraper hauled nine yards every four minutes on a recent job for the R. J. Boe Construction Company. Contractor Russell Boe likes the "wonderful acceleration and trouble-free performance GM Diesel power gives me." He says, "All you need to do is keep water, oil and clean fuel in that GM Diesel and you'll get a good day's work out of it."

## DETROIT DIESEL ENGINE DIVISION

GENERAL MOTORS • DETROIT 28, MICHIGAN

Single Engines . . . 30 to 300 H.P. • Multiple Units . . . Up to 893 H.P.



The Carl E. Nelson Co.'s H. K. Imperial crushing plant, powered by Caterpillar engines and a Cat electric set, turns out road material for a job near Burley, Idaho, for the State Department of Highways.

## Scheduled inspections lead to bigger profits

Bi-weekly equipment inspections, standard operating procedure for Carl E. Nelson Co., Logan, Utah, are the most important bit of work for its mechanics. According to Carl E. Nelson, company president, these inspections do more to keep equipment on the line and producing revenue than any amount of repair work.

The company operates under the assumption that no machine will

make money if it stands idle. If routine checks are slighted, breakdowns are bound to occur and downtime results. And while a mechanic is flat on his back repairing a piece of equipment, he is forced to neglect routine inspections which help keep other machines operating. The company's inspection policy is based on the fact that a good mechanic can make more money for the company by getting out to inspect equipment, enlist the cooperation of operators, and prevent expensive repairs.

A moderate-sized outfit, Nelson did a gross volume of \$2 million worth of construction last year. Specializing in highway and airport work, but sometimes taking jobs in other fields too, the Nelson organization works in Idaho, Utah, Nevada, Wyoming, and occasionally, California. It usually has four major spreads working simultaneously. Recent work it did was an 18.6-mile hot-paving highway job from Moran to the south end of Yellowstone National Park in Wyoming. A 56-mile continuous asphalt-resurfacing job in the vicinity of the Frenchman Flats Atomic Proving Grounds, done about a year ago for the Nevada Department of Highways, was one of the firm's biggest contracts.

Essential to this volume of business is the company's policy of top-notch maintenance. Since the policy was introduced, breakdowns are less frequent and equipment is doing more productive work. The firm matches some of the best maintenance records being turned in by bigger companies, working a Caterpillar D8 from 8,000 to 10,000 hours between major overhauls.

### Centralized Shops

Though the company's operations are scattered, all major equipment repair work is done at its headquarters shop at Logan. This sometimes means that equipment must be hauled several hundred miles to the shop on one of the company's two Pike low-bed trailers.

The repair shop, also the supervisory headquarters of the company, is located on a 5-acre tract of level ground on the north edge of Logan, just off U. S. 89 and 91. On it are a long tin shed, with 22 open storage bays along its north and east sides. The main shop building is a Butler prefabricated structure measuring 100 x 50 feet. A wing at the northern extremity of the main room is used as a welding and machine shop. The building's floor is a 9-inch concrete slab with radiant heating. The main shop also is equipped with a small air conditioning unit for office use in hot weather.

The building is equipped for major repairs on the company's heaviest pieces of equipment, and in the winter, most of the company's key personnel comprise the maintenance crew of about 25 men. The main shop also has a welding center, a machine shop, a small office, and a double-

CONTRACTORS AND ENGINEERS



## The MILLER

### BITUMINOUS CONCRETE AND AGGREGATE SPREADER

The most widely accepted lightweight, low-cost spreader in the world.

Long experience on thousands of jobs proves these advantages:

Automatically levels material despite any base irregularities.

Sturdy—Simple—Requires no maintenance or replacement.

Lightweight—easily moved and maneuvered on job site.

Versatile—Lays any width, any thickness up to 8", either hot or cold mix black top, and aggregate.

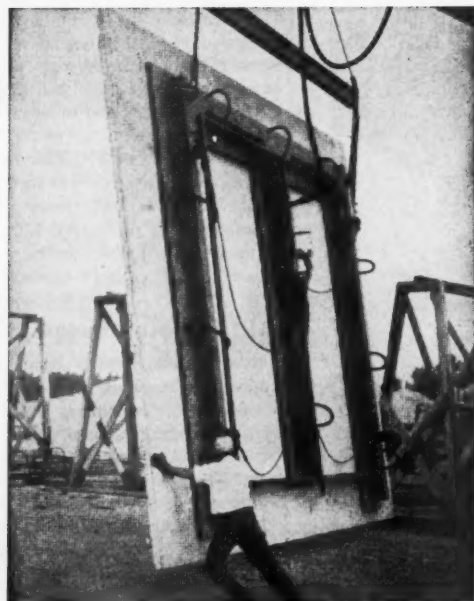
Economical—Handles one ton per minute . . . cuts hand labor costs 90%.

Universal Use—Can be towed by any truck equipped with hitches clamped on in several minutes.

Write today for free literature and name of nearest dealer.

**THE MILLER SPREADER CORP.**  
120 PIKE STREET • YOUNGSTOWN 2, OHIO

## MAGIC CARPET for Concrete Handling



Contractor: Concrete Casting Co., Kansas City, Mo.

### THE VACUUM LIFTER

No inserts or strongbacks to adjust . . . a turned valve does the work. Harnessed atmospheric pressure provides temporary reinforcement — eliminates point stresses and the need for additional steel.

EARLY STRIPPING — EARLY ERECTION

**VACUUM CONCRETE, INC.**

4210 Sansom Street • Philadelphia, Pa.



**Systematic maintenance work  
on all types of equipment  
keeps machines working and  
prevents expensive repairs**

deck space for the storage of parts.

This shop is arranged with compressed air, electric-light plugs, welding equipment, and an overhead crane. Efficient shop service units include a Rodgers hydraulic press, Buffalo drill press, large size Sioux valve replacer, two Sioux heavy-duty grinders, a small Atlas lathe, and a larger Carroll & Jamieson machine lathe with 8-inch throw. Oxweld acetylene equipment, a Marquette arc welder, a Kerrick steam cleaner, 2-ton Budgit hoist, and large-size Par air compressor are among basic equipment which is augmented by a complete line of machine tools.

In the buildings across the yard are a paint shop, a tire-storage area, an area for storing heavy machine parts, and a miscellaneous closed storage area. Although the company still maintains a sizable parts inventory, it is tending to rely more and more on the parts inventories of the major equipment distributors nearby.

Since Nelson's equipment is well standardized, training mechanics is not a difficulty. Manufacturer's parts books and service manuals are available at the Logan headquarters and at every field installation.

**Scheduled Inspections**

When the shop superintendent gets into his car for a regular equipment inspection trip to the field, he is confident of finding every man on the spread cooperative. His job has been made easier by Carl Nelson and by general manager Norm Parson, who have developed a spirit of team work.

This teamwork is the result, first of all, of the emphasis which top management has placed on the productive operation of equipment. A company superintendent knows that one of the best ways to prove himself valuable is to do everything possible to keep equipment on the line and avoid breakdowns. For this reason, Nelson's superintendents select operators carefully and try to retain good men.

A new operator is usually given a shakedown run under the supervision of an experienced operator. This test is stringent, and designed to weed out good operators from men who only claim to be operators.

Operators, on their part, realize that it is to their advantage to keep their equipment in good condition. Key men, retained through the winter months, are sometimes put to work in the shop repairing equipment with which they are familiar.

This system of careful supervision and operation is rounded out by personal inspections, made every two weeks by Nelson's shop superintendent. He finds probable trouble spots in equipment and has the authority to order job mechanics to make either immediate repairs or minor operating repairs. He expedites the shipment of parts from the Logan headquarters, trains operators, and acts as a clearing house for important information

manufacturers disseminate about their equipment.

When full-flow paper-type filters were recently found not to be doing a proper oil-cleaning job, it was the shop superintendent who passed the word around to substitute full-flow

(Concluded on next page)



Subbase work on one of Nelson's paving jobs is handled by a Seaman Trav-L-Plant, a Pulvi-Mixer, and a Buffalo-Springfield steel-wheel roller.

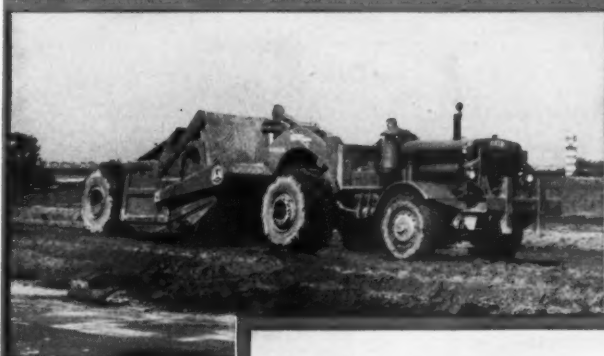
**Faster  
Cycle Time  
and more  
Pay Yards!**



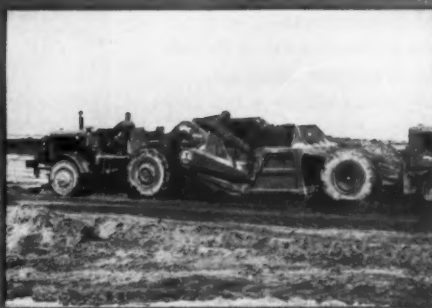
**"EUC" SCRAPER  
Load Easier-  
Haul Faster**

On short hauls as well as long ones—and in all types of material—"Euc" Scrapers move more pay yards per hour because they are easy loading and maintain fast cycle time. They have the power and traction needed for fast loading, high travel speed and for working on steep grades with full payload.

At McGuire Air Force Base in New Jersey, for example, six "Eucs" with 300 h.p. engines and Torqmatic



Drive and scraper  
move 29.50 x 25 for  
traction in sandy soil.



Torqmatic Drive utilizes maximum engine h.p. at all times.

Drives average 5 trips per hour or 3000 ft. one way haul for Tec Corp. of Dallas, Texas. On another section of this 750,000 yd. runway grading job, the fast cycle time of 1 Euclid 15.5 cu. yd. Scrapers enabled them to move 265 yds. each per hour on a 2000 ft. haul.

"Euc" Scrapers have struck capacities of 7, 12, 15.5 and 18 cu. yds—have your Euclid Distributor show you how they can do more work at low cost per yard on your present future work.

**EUCLID DIVISION  
GENERAL MOTORS CORPORATION  
Cleveland 17, Ohio**



**Euclid Equipment**





(Continued from preceding page)

rag-type filters, preferably Winslow or Cyclone brands. Standard's RPM Delo lubricating oil and American Lubricant Co's. track-roller grease are used on all its equipment.

With the company currently listing about 60 pieces of heavy equipment on its roster, it has more money tied up in machinery than it bids on most of its jobs. For this reason, efficient upkeep is a necessity on such units as its Cedarapids Master Tan-

A Budgit hoist and Walker jack lift a flat-iron roller in the repair shop headquarters at Logan, Utah. Though Nelson frequently works out of the state, all repairs are handled in this centralized shop.

Ray Day Photo

## Barnes Pumps

..... HOLD 6-MONTHS SCHEDULE IN  
COMPLETING 645-MILE LAKEHEAD PIPELINE EXTENSION!



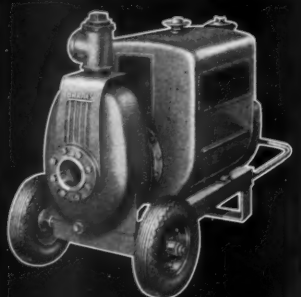
Barnes Self-Priming Pumps held down the water level in stream beds while wagon drills pierced rock for blasting. Wherever water was wanted or unwanted on the Lakehead Pipeline Extension—you saw Barnes Pumps working right along with the men—12 hours a day—6 days a week!

"ON SCHEDULE"—every contractor knows what that means! Here a Barnes 3-inch Pump, working under toughest conditions, is "on schedule" with Barnes dependability and performance! Laying 645 miles of 30-inch pipe from the lakehead ports of Duluth and Superior across Northern Wisconsin and Upper Michigan, under the Strait of Mackinac, southeasterly across Michigan and under the St. Clair River to Sarnia, Ont., was rugged work! And Barnes makes rugged pumps—for rugged work—in rugged terrain—to keep rugged schedules! When the going is tough, call for Barnes Self-Priming Centrifugal Pumps. See your distributor or write Barnes about your problem—there's a Barnes Pump to solve it!

\* AED CONVENTION—See us at the Conrad Hilton in our Headquarters Parlor



**BARNES MANUFACTURING CO.**  
Mansfield, Ohio      Oakland 21, Calif.



Barnes has a pump for every pumping need—from 1,000 to 90,000 gph. capacities. Choice of Gasoline, Diesel, Electric or Pulley Drives.

dem, H. K. Imperial crushing plant, and Madsen and Cedarapids asphalt plants. Other machines in the lineup are ten Caterpillar tractors, six steel-wheel rollers, a Flynn cement spreader, two large Seaman self-propelled Trav-L-Plants, and a special 9-wheel self-propelled pneumatic roller which the company developed. A self-propelled chip spreader, a fleet of International L-190B and K-8B trucks, six No. 12 Caterpillar motor graders, an LS-85 Link-Belt, and a Unit 3/4-yard power shovel, five tractor scrapers, two asphalt pavers, an Apsco widening machine, a fleet of 12 pickup trucks, two asphalt pressure distributors, a 3,500-gallon asphalt booster, four 3,000-gallon water sprinklers, and a host of miscellaneous smaller equipment round out the list.

Getting the most work out of this equipment is entirely dependent upon effective maintenance. Nelson depends on factory-engineered repair parts and factory-approved replacement methods in repair work of all kinds. But for keeping its maintenance program at a high level of efficiency, the company relies on the combination of a regular maintenance schedule, a skilled superintendent, careful operators, and competent master mechanic, all working together to keep equipment working. This cooperation among operators, superintendents, and mechanics—one of the things which can never be standardized—gets a high rating in Nelson's job-management program.

THE END

### New Welding Electrode For Rebuilding Equipment

■ Improved flux coating, a more rapid burn-off rate, porosity-free deposits and smoother flow characteristics are features reported for the new Mir-O-Col No. 2 hard-facing electrode. Marketed by Mir-O-Col Alloy Co., Inc., 312 North Avenue 21, Los Angeles 31, Calif., the rod is especially recommended for rebuilding heavy-duty equipment where severe impact and abrasion are important factors.

Mir-O-Col No. 2 can be used as a general hard-facing rod and is best applied to large sections by the electric-arc process. It can be applied in single narrow beads or heavy weave passes up to 3/4-inch in depth without danger of chipping, spalling, or breaking at the bond.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 500.

ROAD BUILDERS — IT'S SENSATIONAL

DRAGS **PECKERWOOD** DRAGS

STEEL SPRING WIRE ROAD BROOMS  
MADE IN ANY C-O-N-T-I-N-U-O-U-S  
LENGTH UP TO 12 FEET  
WIDTH 6 INCHES—IT'S DIFFERENT  
ASSEMBLE YOUR OWN—IN ANY SHAPE  
REQUIRED—IN MINUTES, NOT HOURS

NO FRAME REQUIRED

MADE WITH KILN DRIED 6" WIDE  
HARDWOOD AND HEAVY SPRING STEEL  
WIRES TRIPLE OUT EACH HOLE.  
NOT STAPLE SET.

THIS  
IS IT

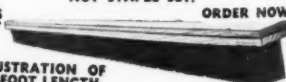
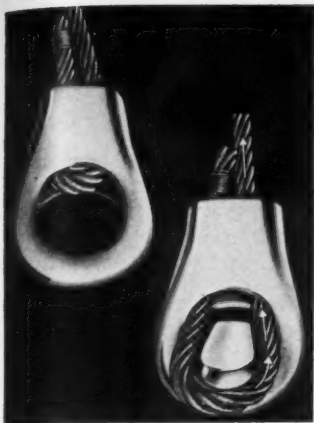


ILLUSTRATION OF  
10-FOOT LENGTH  
ONLY \$3.50

RUNNING FOOT F.O.B. KC., MO.  
NOTICE! Our 15' length Unit Drag 3" wide  
with the two bolts that fit your frame,  
still \$2.50 ea.

SINCE **VAN BRUSH MFG. CO.** 1928  
327 S. WEST BLVD., KANSAS CITY 8, MO.  
CONTRACTORS AND ENGINEERS





The wedge-type choker socket.

### New Wire-Rope Socket Eliminates Eye Splicing

■ A new wire-rope fitting, called the wedge-type choker socket, has been designed to provide a quick method of putting an eye in a piece of wire rope. According to the manufacturer, Electric Steel Foundry Co., the socket can be installed in the field without any special equipment or tools in 3 minutes.

To install this wire-rope ending, it is only necessary to thread the rope through the socket, loop it around and thread it back in the socket, place the wedge in the loop formed, and pull the wire rope tight. The sockets can be quickly disengaged by driving out the wedge.

Cast of Esco manganese steel, the socket is available in 1/2 and 3/4-inch sizes weighing 3 3/4 pounds.

For further information write to Electric Steel Foundry Co., 2141 N. W. 25th Ave., Portland 10, Oreg., or use the Request Card at age 18. Circle No. 416.

### Offer Complete Line Of Heavy-Duty Engines

■ Eighteen heavy-duty power units are described in a catalog just released by the International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill. The engines covered range from 16.5 to 200 net horsepower. Groups illustrated include four and six-cylinder carbureted units, and four and six-cylinder diesel units.

Full specifications are given for application of the units to new installations or as replacements for existing power.

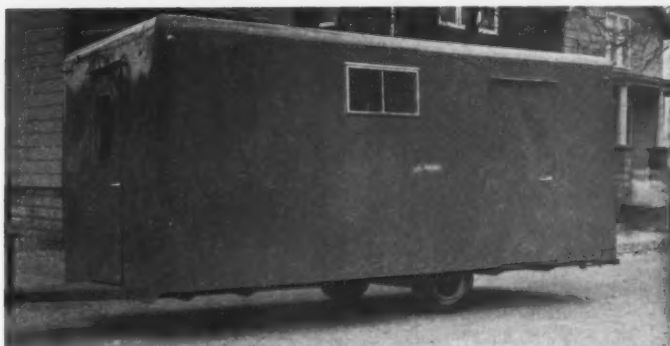
To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 468.

### Booklet Shows Advantages Of Steel Guardrail

■ The advantages of Bethlehem Safety-Beam guardrail, used as a safeguard at danger points on highways, are set forth in a booklet from Bethlehem Steel Co., Bethlehem, Pa. Illustrated with photographs, charts, and diagrams, the booklet gives a picture story of how the guardrail is used to provide protection to motorists.

Standard details and assembly plans for guardrail to meet every conceivable condition are shown with drawings, together with tables of dimensions and mechanical properties.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 471.



THE CALUMET MOBILE OFFICE TRAILER illustrated has been specially designed for fire-hazard areas. In addition to being of fire-resistant steel construction, the trailer has such safeguards as vapor-proof lighting and steam heating. The trailer can accommodate desks, drawing boards, blueprint cabinets, and includes such standard equipment as large floor-to-ceiling lockers and plug-in heating and lighting systems. The line includes models in a number of different lengths. For further information write to Calumet Coach Co., 11577 S. Wabash Ave., Chicago 28, Ill., or use the Request Card at page 18. Circle No. 403.

## BARCO RAMMERS



1. Cover More Area!
2. Tamp a Heavier Lift of Dirt!
3. Get Better Compaction!

*Says* J. A. Tobin Construction Co.  
Kansas City, Mo.

"EVERYBODY seems to be turning to Barco Rammers; our company certainly is," states George Pennington, Warehouse Foreman, of J. A. Tobin Construction Co., Kansas City, Mo. "The Barco machines cover more area, tamp a heavier lift of dirt, and get better compaction . . . Never heard a complaint on their operation in three years . . . They really do the work!"

Two of the Tobin Company's Rammers are shown in the above picture working on a fill over a culvert on Highway 69 near Kansas City. Other compaction being handled is around water mains and near ends of bridges. One of the most important advantages offered by Barco Rammers is helping contractors get jobs finished on time. YOU CAN GET IMMEDIATE DELIVERY ON BARCO RAMMERS NOW — CALL OUR NEAREST DISTRIBUTOR TODAY OR WRITE.

**BARCO Manufacturing Co.**  
518D Hough St.,  
Barrington, Illinois

For Soil Compaction Close to Walls,  
Culverts and Abutments—in Trenches, Ditches

GIVE TO  
CONQUER  
CANCER



AMERICAN  
CANCER  
SOCIETY

The relocation and complete rebuilding of a 20-mile stretch of U. S. 6 near Ely, Nev., was made a one-season job by Dodge Construction, Inc., Fallon, Nev., contractor on the \$547,000 job for the Nevada Department of Highways. A federal-aid undertaking, this job was done as part of the state's accelerated highway program which was started several years ago.

Altogether the work, which took 120 working days to complete, included grading, construction of two concrete culverts, installation of corrugated metal-pipe drains, together with the laying of gravel subbase, plant-mix asphalt surfacing, and an armor coat of chips and asphalt.

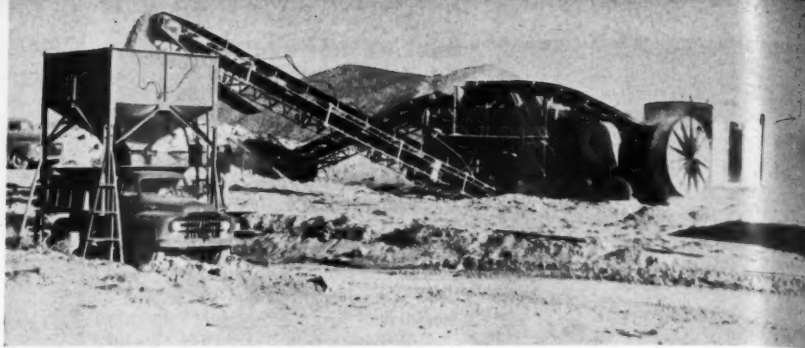
Major quantities included 300,000 cubic yards of excavation, 200,000 tons of granular base-course material, 18,000,000 gallons of water, and 3,023 tons of 120 to 150-penetration asphalt.

The finished 20-mile highway is 33 feet wide and consists of a 24-foot-wide roadway with 4½ foot shoulders on either side. The chip coat was used only on the 24-foot roadway, and the shoulder pavement was sealed with black asphalt. This gave a different color to roadway and shoulders.

The highway consists of 95 per cent compaction in the subbase, from 4 to 12 inches of 3-inch-minus granular base course, 3½ inches of 1-inch-minus gravel leveling course, and 2½ inches of plant-mix asphalt made

Base-course material turned out by the Cedarapids Junior Tandem crusher is taken to the surge hopper by conveyor belt, then loaded into a truck which will haul the aggregate to the site.

Ray Day Photo



## Contractor makes fast work of road reconstruction

with 120 to 150-penetration asphaltic cement.

### Handling Traffic

Since much of the new construction is generally parallel to the old bituminous road, several detours were constructed. Traffic was handled either through these detours or by routing traffic over either old or new sections. In some cases, special flagmen were used to direct traffic. This handling of traffic, according to general superintendent Vern Wilson, who managed the project for Dodge, was so efficient that not a single accident occurred.

Long-range rubber-tire equipment

was used efficiently to grade the highway, which runs through rolling valley country to the foothills of the mountains to the south. A natural formation of sandy and gravelly material, combined with long hauls which sometimes approached one mile between the balance point, made the job a natural for four LeTourneau-Westinghouse Tournapulls.

Auxiliary equipment working with the Tournapulls included two Allis-Chalmers HD-20 pusher tractors, a LeTourneau K-30 roter, nine water-tank trucks of various sizes, four Caterpillar No. 12 motor graders, a set of McCoy sheepfoot rollers, a Caterpillar D8 tractor and dozer used

especially for pioneering, and another Caterpillar D8 tractor with dozer which was used for installing pipe culverts.

A small portion of the excavation consisting of caliche, was easily pushed after being loosened by a ripper. But approximately 2,500 cubic yards resisted all attempts at loosening and had to be drilled and shot. A rented Ingersoll-Rand 500-cubic-foot Gyro-Flo compressor and two Ingersoll-Rand wagon drills prepared the rock, and shooting was done in two lifts, using 18-foot drill steel with Ingersoll-Rand Carset tungsten-carbide bits. The holes were put down on average 5-foot centers, column-loaded

**save 3 ways**  
MONEY MATERIALS  
MANPOWER

on your building  
construction jobs with  
**ROOSHORS**  
the one-man adjustable shore

**SIMPLE** . . . because ROOSHORS are adjustable in place;  
no cutting, no fitting, no wedging.

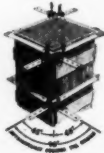
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CONTRACTORS AND ENGINEERS



**Grading, drainage, subbase,  
asphaltic concrete surfacing  
is completed in 120 days  
on 20-mile highway relocation**

The asphaltic-concrete pavement for the 33-foot-wide roadway of U. S. 6 is put down in 11-foot strips by a Barber-Greene tamping-leveling finisher. The material is laid directly over the rolled subbase.

Ray Day Photo



with powder, and shot by a blasting machine. Heavy loading caused enough fracturing action to permit the material to be loaded by the Tournapulls.

Lack of water was one of the biggest problems on the unclassified excavation. The material was generally dry as it came from the cuts and, since grading and earthwork were carried on during the hot summer months, a large volume of water had to be added. In addition to hauling water, Dodge Construction went to the expense of drilling a 300-foot well to produce water. Three other wells also were used. Each of the holes was equipped with a 4-inch Peerless pump

which supplied the water trucks hauling between the wells and the fill.

Fill material was placed in lifts of less than 8 inches, the necessary moisture was applied, and the material rolled.

**Base Course Crushed**

Another large segment of the 20-mile job consisted of the production and installation of crushed base course directly over the compacted subgrade and underneath the plant-mix pavement. Material for this came from a Cedarapids Junior Tandem crusher which worked six 10-hour shifts per week. Four crusher setups were necessary, each considerably dif-

ferent from the other as far as the characteristics of the raw material were concerned. The output of the plant ranged from 200 to 300 tons per hour, depending on whether very little or a great deal of the material had to be crushed.

The Cedarapids plant, equipped with a 10 x 36 jaw crusher and a set of 40 x 22 rolls, received its raw pit feed from a Northwest Model 41 power shovel which loaded two dump trucks hauling between the pit and the plant trap. The shovel used a 1-yard Amsco dipper, and worked generally against a 12 to 15-foot bank in digging out the raw material.

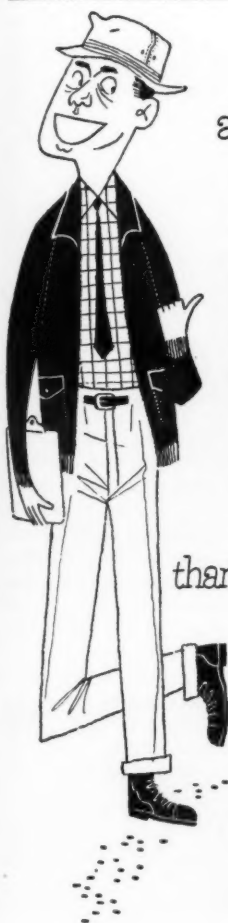
Finished granular base-course ma-

terial from this plant was transferred by conveyor belt to a surge hopper. Several trucks loaded under this hopper and took the material by haul road either to the highway or to various stockpiles. The same rock plant produced all the necessary mineral aggregate for the hot-mix filler and the stone chips for the armor or seal coat down the center of the highway.

**Hot-Plant Setup**

Dodge's asphalt plant consisted of a 3,000-pound Standard machine, with its drives and gears modernized. Working with mineral aggregate containing up to 8 per cent moisture, this

(Concluded on next page)



"She's 26 years old...  
and **more** rugged than ever!



Railway Crane repowered with a D-326 Cat equipped with S-N Gear Model 2265-12/3065-5P

thanks to **S-N** reduction gears"

says The Dolomite Products Co., Penfield, N. Y.

Repowering this Brownhoist Railway Crane with a new "Cat" engine called for a transmission gear unit that would stand up to the gruelling, rugged grind of heavy stock-piling jobs . . . provide smooth transmission of full power from engine to load with a minimum of maintenance cost. S-N heavy duty herringbone Reduction Gears with Cut-off Clutches, meet all these requirements . . . and more! Can be installed as original equipment, too, with all types of engines from 40 H. P. units to 775 H. P. giants. Available in a broad range of reduction ratios — 1.5:1 up to 4:1.

Write industrial division for catalog sheets.



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Transmission Engineers  
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HEAVY**

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BLOCKS**



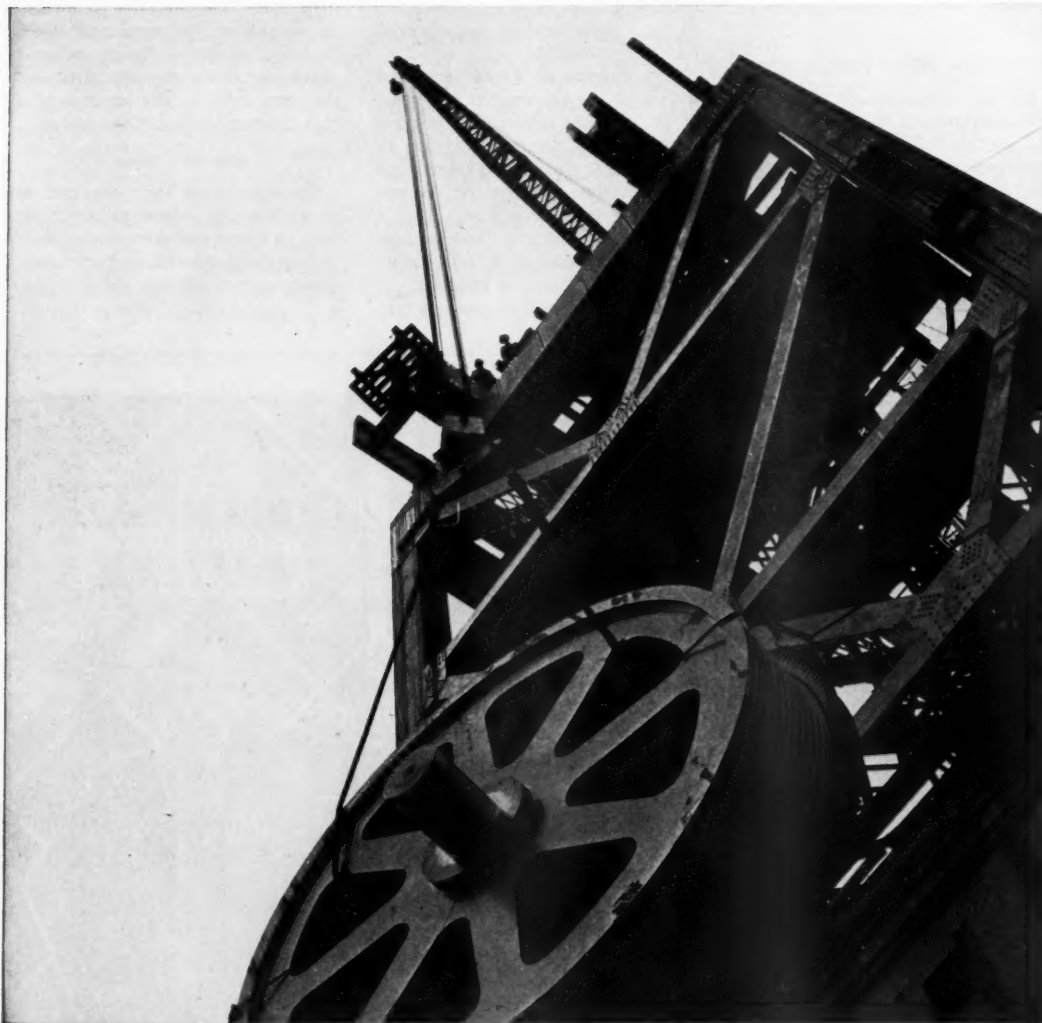
**McKISSICK**

McKISSICK PRODUCTS CORPORATION  
Box 2496 Tulsa, Oklahoma



A Hough Payloader works in the pit where the 3,000-pound Standard asphalt plant is located. Since mineral aggregate was also produced in this pit, there was no haul problem involved in bringing this material to the plant.

Ray Day Photo



**Wire Rope at Work**—Here's an interesting operation that took place during construction of the Queens Welfare Island lift bridge crossing a portion of New York's East River. The giant sheave, weighing 37 tons, is one of a pair in the 170-ft tower at the east end of the bridge. A similar pair were placed in the west tower. Big 2 3/4-in. Bethlehem wire ropes operate over these sheaves, providing links between the ends of the lift span and the counterweights.

The hoisting of the sheaves was no small job, but it was handled smoothly and without mishap by the erection contractor, Harris Structural Steel Company. This, like the operation of the span, is a type of work for which Bethlehem rope is ideally suited, for there is no more dependable cable made anywhere.

Bethlehem Steel Company, Bethlehem, Pa. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

Mill depots and distributors from coast to coast stock Bethlehem rope for the following industries and numerous others:  
CONSTRUCTION • MINING • PETROLEUM • EXCAVATING • QUARRYING • LOGGING • MANUFACTURING



(Continued from preceding page)

machine produced between 90 and 150 tons per hour.

The Standard plant made use of low-pressure burning tips, using a three-nozzle injection system boosted by 25 horsepower to get the fuel into the dryer. Regular No. 6 burner oil for the plant dryer was stored in a 20,000-gallon unit at the site. A horizontal-type steam boiler also was available for routine use.

Auxiliary motors around the plant included a Caterpillar D13000 diesel engine on the pugmill, a 65-kw generator driven by a General Motors engine and a Ford V-8-driven pump which transferred asphalt. The remainder of the plant was all electric and driven by conventional electric motors taking power from the 65-kw generator. The plant made use of a multiple-deck Symons screen which re-sized a two-bin separation of hot aggregate at approximately 235 degrees F and dropped the correct gradation into the weigh hoppers.

Asphalt was a 120 to 150-penetration product originating in the Salt Lake City refinery of Utah-Texas Oil Co. This material was transported by truck to Wendover over U. S. 40 and then down U. S. 50 to Ely. In spite of the fact that this involved a 250-mile one-way haul, deliveries of asphalt were quite dependable.

Only two setups were necessary for the asphalt plant. Both setups were in pits where the Cedarapids crusher had produced mineral aggregate for the mix. This made the haul for the aggregate negligible. The aggregates were simply stacked in front of the hot-plant feeder trap and fed directly to the feeder hopper by a Caterpillar D8 tractor with U-type bulldozer. The plant-mix material consisted of well graded mineral aggregate from 1 inch down with about 5 per cent of asphalt. The material left the plant at an average temperature of about 250 degrees F.

The 33-foot-wide pavement was laid down by a new Barber-Greene tamping-leveling finisher in three 11-foot strips. After the subgrade had been blade-mixed with moisture and rolled down tight by a Buffalo-Springfield 3-axle tandem steel roller, its surface was sealed with a shot of MC-1 asphalt. Plant-mix material was laid directly over the top of the sub-base and rolled by the same Buffalo-Springfield tandem. This machine, ballasted to 14 tons weight, did both knockdown and finish rolling.

THE END

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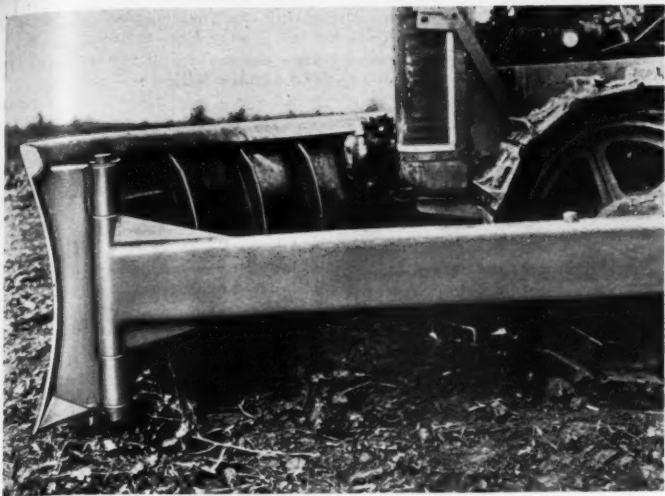
In a Hayward, there's no contact between the closing mechanism and the material handled. This "no contact" feature is a very important one to you—since it means much less wear, reduced upkeep, and a significant dollar-saving in bucket maintenance.

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CONTRACTORS AND ENGINEERS





The redesigned Teale angle-blade dozer.

### Angle-Blade Dozer Is More Maneuverable

■ A new Teale angle-blade dozer just announced is reported by the manufacturer to have less overhang and weight, and to be more maneuverable than the conventional angle dozer of horseshoe design. In addition to eliminating a good deal of weight, the design of the new Model TA angle bulldozer permits the blade to be anchored nearer the crawler track, improving control characteristics.

A further feature is that the new dozer can be converted quickly to tool-bar use involving any pull-behind operation. This is done by removing the dozer blade and turning the push-arms to the rear.

The Teale angle-blade dozer uses twin 4-inch two-way cylinders, a Hydrexco front-mounted pump, and a heavy-duty industrial valve with float position. It fits International Harvester TD-6, TD-9, TD-14; Caterpillar D2, D4, D6; Allis-Chalmers HD-5, and Oliver A, B, and D tractors.

For further information write to Teale & Co., 1415 N. 52nd St., Omaha 2, Nebr., or use the Request Card at page 18. Circle No. 406.

### Testing Equipment for Soils, Asphalt, Concrete

■ More than 1,250 items of apparatus for engineering tests of soils, concrete, asphalt, and construction materials are listed in an illustrated catalog just released by Soiltest, Inc., 4520 W. North Ave., Chicago 39, Ill. The catalog includes suggested laboratory layouts with equipment lists.

The section on soil-mechanics apparatus includes equipment ranging from the basic sampling and preparation items to the actual testing machines for triaxial, unconfined compression, direct shear, CBR, consolidation, and similar tests.

The concrete section lists a wide variety of apparatus for compression and flexure testing, slump, mixing, molding, flow, vibrating, air entrainment, volumetric measurements, curing, and cement testing.

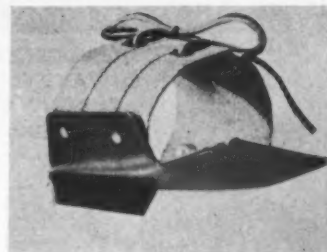
A diversified line of scales, proving rings, dial indicators, ovens, humidifiers, mixers, etc., is also described.

To obtain this comprehensive catalog write to the company, or use the Request Card at page 18. Circle No. 505.

### Cast-Steel Sheaves

■ The Farrell-Cheek line of improved carbon and alloy cast-steel sheaves is illustrated in the folder available on request. This literature also contains information on the company's complete line of wire-rope fittings and accessories.

To obtain Form 40M-LP write to Farrell-Cheek Steel Co., Sandusky, Ohio, or use the Request Card at page 18. Circle No. 509.



The Atlas foot iron.

### Shoe Guard Protects Foot From Injury Against Spade

■ A new safety aid slips over the user's shoe to protect his shoe sole from damage and his foot from injury while digging. Because it protects the worker's foot from the edge of the shovel, the Atlas foot iron increases

the amount of work accomplished by making it possible to use greater force in digging. Made of 12-gage cold-rolled steel, the product is available in one size to fit any shoe.

For further information write to Atlas Foot Iron Co., 911 S. Halsted St., Chicago 7, Ill., or use the Request Card at page 18. Circle No. 431.

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- EASIER HANDLING.** Because of rigid, light-weight construction, tapered steel Monotubes are easy to transport and handle on the job.
- STANDARD DRIVING EQUIPMENT.** Light, mobile rigs and standard hammers are all you need to drive Monotubes. No need for an internal mandrel.
- RAPID INSTALLATION.** Monotubes "go in" fast because of easier handling and rig mobility. One Monotube can be picked up while another is being driven . . . no lost time waiting to get pile in leads.
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- EASILY EXTENDED.** Fast, single girth welding of telescopic joints makes Monotubes the easiest integral pile to extend.
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- CHOICE OF ASSEMBLY.** Monotubes can be factory assembled to any length. If desired, sections can be quickly field assembled.
- VERSATILITY.** Variations in diameter, gauge and taper make Monotube Piles readily adaptable to all conditions.




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For further data on Monotube piles for bridge, pier or highway construction, and foundations for every type and size of building, request Catalog No. 81. Address The Union Metal Manufacturing Company, Canton 5, Ohio.

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Portable  
Model A

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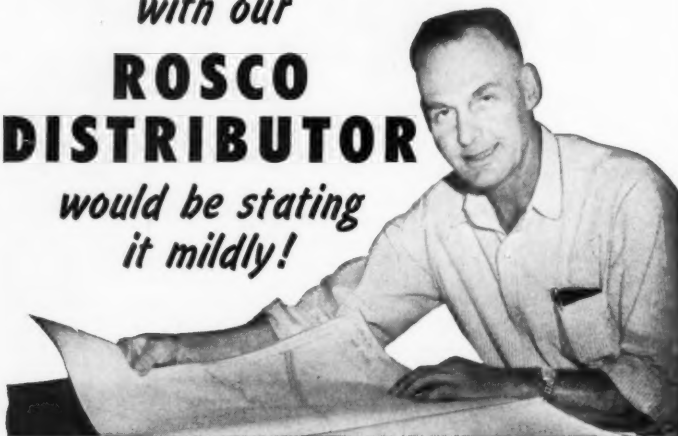


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*would be stating  
it mildly!*



Ed M. Knott, Asst. City Eng. Muscatine, Iowa



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Equipment"**

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"Early in the summer of 1951 the City Council of Muscatine purchased a Rosco 1000 gallon capacity Distributor and mounted it on a 1½ ton truck. To say that we are well pleased with our Rosco Distributor would be stating it mildly."

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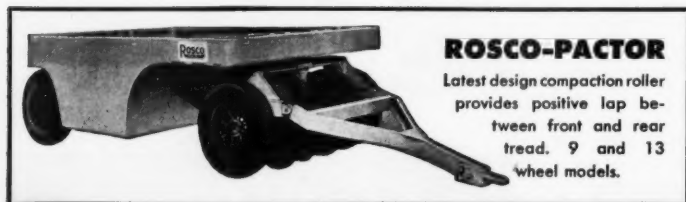
"During all this time we had only one minor breakdown on our Rosco which was taken care of in less than 2 hours time by our own mechanics."

"All of this work was done directly under my supervision and I feel well qualified to praise our Rosco as one of the best pieces of equipment owned by the City of Muscatine and we own nearly \$150,000 worth of street construction equipment of all makes."

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- Uniform application through exclusive **Pressure Metering**
- Use **any length of Spraybar** without changing pressure
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Ask your dealer, or write Rosco for the full story of the Bituminous Distributor with "P.M."—the Pressure Metering Method.



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3118 SNELLING AVENUE • MINNEAPOLIS 6, MINNESOTA  
DISTRIBUTORS • MAINTAINERS • BROOMS  
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Three Calweld drill rigs operate close together to complete a foundation for a west coast brewery. On this job, the contractor merely put more drill rigs to work to meet stepped-up construction schedule. ▶

Ray Day Photo

## Economy and the drilled pile

by DONALD F. WARREN, Donald R. Warren Co.,  
Los Angeles, Calif.

The development of better foundation methods during the past two decades has been one of the most important factors contributing to a lowering of building-construction costs. Coupled with a refinement in preliminary soils investigations, these cheaper and faster methods are helping the foundation designer do a better job for the owner.

In many formations, it is no longer necessary to design a foundation around cumbersome pile-driving methods. While this is still the one and only method of constructing foundations in submerged heavy gravel or boulders, better methods employing the drilled-pile principle have been developed and fit many formations found all over the country.

As a general rule, drilled piles can be used if a good bearing material is found from 15 to 50 feet below an overburden of inferior but drillable material. Material which can be drilled is that which can be excavated rapidly and which will stand up until concrete can be placed without caving or sloughing.

### Fits Various Conditions

Drilled piles can be used if this material is found at a surface which will permit the piles to be used on

either a bearing or a skin-friction basis, or if the water table in the area presents no problems. When the drilled-pile method is used, it will prove particularly economical at points of equipment congestion.

Even a foundation engineer may be surprised at how often such conditions can be found. Foundation designing in the southern California area may be considered representative of the country as a whole, for in this region practically every type of soil formation exists. Diatomaceous earth, commonly called "dynamite" because it is almost impossible to compact to its original density once it has been disturbed, is found in the vicinity of Palos Verdes. In addition to the sands and gravels in the alluvial fan areas in the San Fernando Valley and the San Gabriel area, there are areas having flour silt.

Adobe overburden topsoil, quite common in the area, has all the heaving and contracting characteristics that accompany various changes of season and moisture. The oil-impregnated soil near the La Brea Tar Pit section presents another problem. Peat beds extend from the Stocker-Crenshaw area past Hughes Aircraft Co.

Along the ocean front there are

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Muller's earliest objective—to make the best possible plaster and mortar mixer and sell it for the lowest possible price—was achieved by: (1) specialization on a few models . . . (2) careful selection of materials and

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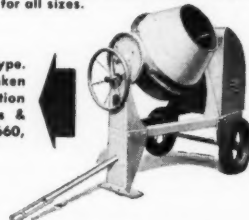
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3 models, 3 to 6 cu. ft. capacities, tilting type. Ample size drums, fast mixing action, Timken Bearings, electrically welded, sturdy construction throughout. Power—electric motor or Briggs & Stratton Air Cooled Engines. Prices \$230 to \$660, FOB Factory.



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CONTRACTORS AND ENGINEERS





soft clays in the vicinity of Long Beach. The Terminal Island area presents subsidence problems. There are slide and creep areas in the Pacific Palisades. Hollywood Hills has decomposed granite and sandstone stratas.

Along with these many types of soils, there exists a fluctuating water table. There are areas in San Fernando Valley where the water table is practically at ground surface.

These various formations, and the problems they pose, have been instrumental in making the design of building foundations a highly specialized procedure. Today, careful substructure investigations of soil in the foundation area are required if the contractor hopes to do an economical job. The information obtained, together with labor and equipment costs, help determine the final design.

At times, the advantage of using drilled piles instead of driven piles is clear cut. But when the features of the foundation soil are not too favorable for the drilled-pile method, other considerations will affect the choice of a method.

#### Effective Use

On a recent railroad overpass job, where a major highway had to be

taken over the marshalling yards of a major railroad, the financial advantage of using drilled rather than driven piles was so small that both methods were listed in alternative bids by state specifications. Here, the drilled-type pile won out, because it was easier, cheaper, and simpler to move truck-mounted earth-boring drills into the busy railroad yard than it was to mobilize heavy skid-mounted pile-driver equipment.

The use of drilled cast-in-place piles on a large brewery proved wise when it became necessary to speed work on the foundation to meet the building schedule. Here, George F. Casey Co., Los Angeles subcontractor specializing in foundation work by the drilled method, simply increased the number of Calweld earth-boring drills on the job to hasten the work.

At the jet-aircraft center designed for Lockheed Aircraft Corp., at Palmdale, Calif., by Donald R. Warren Co., drilled piles were used effectively. Careful investigation showed that the foundation was fairly sandy but that the particles were cohesive enough to hold together until holes could be drilled and filled with concrete. Modern improved methods of determining either direct or triaxial shear characteristics permitted the design

(Continued on next page)

## RUEMELIN Blast Generators

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Many contractors use Ruemelin Blast Generators for cleaning steel work to remove rust, paint and scale before repainting. These machines are also used to remove laitance from cement wherever concrete construction is in progress. A wet adapting nozzle can be furnished to convert dry machines to wet type of operation. Built in several sizes.

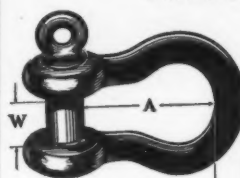
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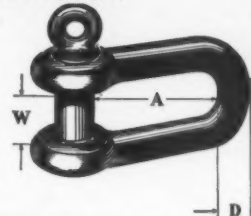
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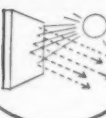
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**Tectum®**  
plank and tile

*defy heat transfer*

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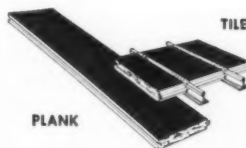
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Sweet's Architectural File.

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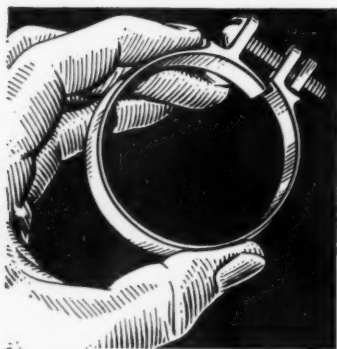


A Calweld earth-boring drill works on a foundation being constructed for a factory by George F. Casey Co., Los Angeles contractor. This job, in a suitable formation, was done easily and quickly by the drilled-pile method.

Ray Day Photos



Concrete goes into another foundation using drilled-type piles. Here, concrete work moves swiftly, and since the ground was left undisturbed, much costly backfilling was eliminated.



## THIS is the CLAMP...

That is easiest to attach; provides strong, full-circumference grip on the hose; and can be used again and again . . . always with same sure holding power.

**"KING"**  
SINGLE and DOUBLE BOLT  
HOSE CLAMPS

Made of tough, durable malleable iron . . . completely rustproofed. Full-width tongue between reinforced bolt lugs prevents pinching and damaging hose. Bolts are carefully machined and threaded for maximum ease of application.

Single bolt style, sizes 3/4" to 5 1/4"; double bolt style, sizes 3 1/2" to 17 1/4".



Double Bolt

Stocked by Manufacturers and Distributors of Industrial Rubber Products

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Valve & Coupling Co.  
GENERAL OFFICES & FACTORY—PHILADELPHIA 22, PA.  
BRANCHES—CHICAGO, BIRMINGHAM, LOS ANGELES, HOUSTON  
DIXON VALVE & COUPLING CO. LTD., TORONTO, Associate Companies:  
Buck Iron Company, Inc., Quakertown, Pa. Precision Steel Stamp Company, Canton, N.Y.

(Continued from preceding page)

to be made rapidly and accurately for the hangar-type buildings.

### Methods Combined

Frequently, combinations of methods can be used. This was done at the American Can Co. factory in Los Angeles, where excellent foundation material lay from 20 to 30 feet below ground surface. On this job, extreme loads approaching 4,000 pounds per square foot had to be accommodated. The economical procedure was to have the structural load carried on drilled cast-in-place piles which reached down to good material in the lower strata. The floor slab was then separated from the structural portion of the building and floated on the overburden. The result was so satisfactory that the method has since been used on another factory structure.

The use of the drilled-pile method is credited with saving thousands of dollars on the Houston Freeway in southern Texas, where it was used in sinking piles in stiff clays for bridge structures. The money-saving ad-

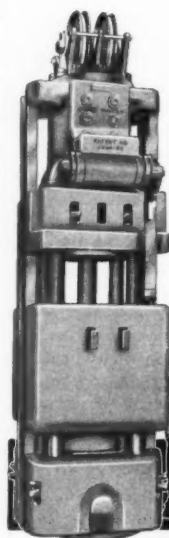
(Concluded on facing page)

Manufacturers of Pile Driving Hammers and Pile Extractors since 1852

## Super VULCAN Differential Acting Pile Hammers Drive Toughest Piles

Positive action . . . simple design  
... rugged strength. Specialized power for driving the heaviest, longest and most difficult piling.

Write today for complete details and name of nearest dealer...



**VULCAN IRON WORKS**  
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## BLACKHAWK Trench Hog

A low cost, mobile, versatile, trencher



A Ford or Ferguson tractor mounted, versatile, small trencher with big trencher performance, digs up to 800' per hour, with wide range of depths and widths—up to 7' deep, 20' wide. One man and a Trench Hog do the work of 40 hand laborers. Ideal for builders, plumbers, electrical contractors, utilities, municipalities and pipeline contractors.

- Depths accurately controlled, hydraulically.
- Cutters furnished in 6" to 20" widths. Easily changed to suit the job. Special cutters for tough soils and frozen ground.
- Optional equipment includes one side dirt delivery attachment to deposit spoil on either right or left side of trench.
- Crumbers available to provide clean, smooth, accurate trench bottom.
- Choice of 7 digging speeds.
- Independent wheel control for straighter line trenching and turning corners.
- Boom raises upward about 90° for transport.
- 4' bulldozer available for backfilling.

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CORPORATION

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NEW HOLSTEIN, WIS.

PRODUCTS FOR BETTER FARMS,  
BETTER INDUSTRIES SINCE 1920



(Continued from preceding page)

Advantages of using drilled piles has been demonstrated so often in stiff and stable formations such as this that specialized pile-driving firms like Raymond Concrete Pile Co. now have drilling machines on their equipment rosters.

#### Little Difference in Design

Sufficient data is now available on various soils, and more is being amassed as time goes on, to make the design of a building foundation more exact. In almost every type of soil, shear values can be predicted so accurately that good foundations are assured. One of the few exceptions is the case of alluvial fans deposited by flash-flood action in desert regions.

But even here, a considerable amount of knowledge is being developed regarding the settlement of the formation.

There is little difference in designing for driven or drilled-type piles when both are dependent on skin friction alone. In this case, the design is governed by the same soil shear values. Foundation piles of either type must be designed on the basis of skin friction or direct bearing value, but never on a combination of both. In soil which can be drilled, the drilled-type pile usually has the advantage when direct bearing value is used as a design basis.

Frequently, the drilled-type pile is as economical as the driven pile when skin-friction values are used. Various types of driven pile shells are now

being designed to enhance skin-friction values which the drilled piles possess.

Drilled-type footings dug by the Calweld earth-boring machine and similar equipment are frequently belled by machine tools to 9-foot diameters. They can be belled larger by hand, so that the under-reamed bell-type footings can be calculated on the basis of so much load per square foot of surface area.

It should not be inferred that drilled piles do not have limitations. But these limitations are few. Drilled piles cannot be used where there is a high water table in uncertain formations, where there is a caving soil, or where an unsuitable stratum is located at the bottom of a hole. Nor can they be used economically if foundation-drilling equipment and contractors are not located close to the project.

However, if foundation material is suitable, a drilled foundation may often prove to be the fastest and most economical method to use. Dependable equipment for drilling and under-reaming this type of foundation is now available, and its use involves a minimum of labor. Now, a driller and a helper operating one rig, can produce approximately the same or a slightly larger number of holes than pile-driver crews can produce in the same amount of time.

THE END

#### Tools for Trowel Trades

A wide variety of troweling tools is illustrated in a new catalog from Goldblatt Tool Co., Dept. Y32, 1960 Walnut St., Kansas City 8, Mo. The catalog lists 1,056 individual tools used by cement finishers, plasterers, lathers, masons, tile-setters, dry-wall applicators, and other contractors.

These tools may be purchased direct by mail or through dealers.

To obtain this catalog write to the company, or use the Request Card at page 18. Circle No. 508.

#### Weed and Grass Killer

A non-selective weed and grass killer reported to kill all types of vegetation has been announced by Chipman Chemical Co., Inc., Bound Brook, N. J.

Chlorea is a uniform non-separating combination of sodium chlorate, borate, and CMU, combining the effectiveness of chlorate on deep-rooted weeds with the prolonged soil-surface action of CMU on shallow-rooted grasses and annual seedling growth. It is also said to have a lasting residual effect to inhibit regrowth. A folder describing the weed killer's properties is available on request.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 450.

## -CONVEYORS- -ALUMINUM FRAMES- BRICK — TILE — CONCRETE

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GASOLINE, AIR, OR ELECTRIC DRIVE

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# NEW!

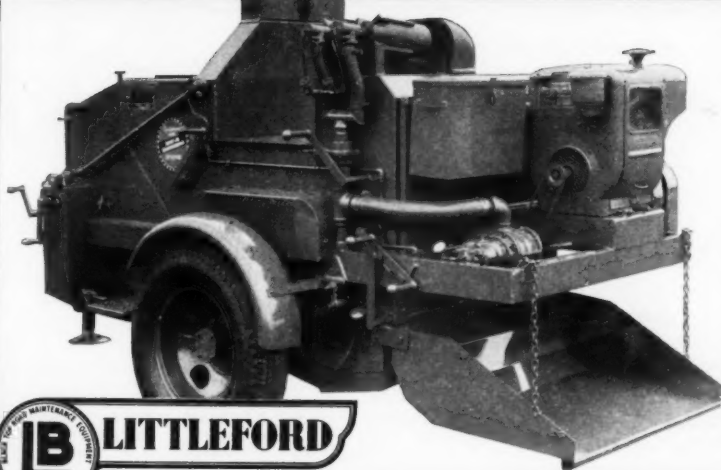
7 ton hot | capacity  
12 ton cold |

for hot and cold bituminous mixes

LITTLEFORD Model 700

## "TRAIL-O-PATCHER"

Bituminous Mixer



**LITTLEFORD**

Littleford Bros., Inc.  
485 E. Pearl St., Cincinnati 2, Ohio

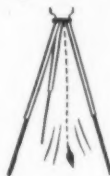
The new Littleford "Trail-O-Patcher"—the first self-contained, all-weather bituminous mixer—gives highway departments and contractors a real break. The 200-gallon asphalt tank holds enough to last all day. And this ingenious new mixer has its own bitumen metering system and its own aggregate drying compartment.

Designed, engineered and built with Littleford quality through and through, the new "Trail-O-Patcher" is your most practical answer to the rising cost of road maintenance. It will pay you to send today for descriptive bulletin EE-28.

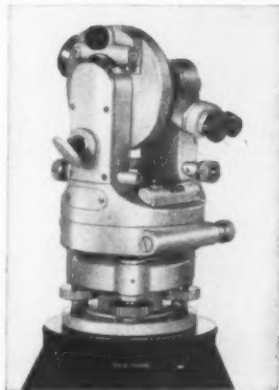


#### SURVEYING NEWS

## NEW THEODOLITE SETS UP QUICKLY, EVEN IN THE WIND



Has this been your problem? Now—old-type mechanical plumb-bob replaced by can't-miss optical principle



- Improved Theodolite reads horizontal and vertical circles simultaneously, through same eyepiece
- Reads direct to 1 min. with no matching of lines—no parallax
- Amazingly blur-free—small, compact, moisture-proof, dust-proof.

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| <input type="checkbox"/> Theodolites   | <input type="checkbox"/> Repair of present instruments, (any make) |

NAME.....

ADDRESS.....



### Self-Dumping Rock Pickers Offered in Wide Line

■ A line of heavy-duty rock pickers is made by the Self Mfg. Co., Twin Falls, Idaho. The line includes seven models with picking swaths varying

from 6 to 12 feet in width. Unloading heights range from 5 to 10 feet. A feature of the rock pickers is that the spacing of the picking tines is ad-

A Bestland Rockmaster rock picker is shown starting to unload. Models are available with either cable or hydraulic controls.

justable on all models. Tines may be set from 1 inch apart to whatever spacing is suitable for the job at hand.

The smaller Bestland rock pickers weigh from 2,700 to 3,000 pounds, and will pick anything from small rocks to boulders of 650 and even 1,000 pounds. A tractor of about 15 drawbar horsepower will handle any of these units under normal conditions.

The big Bestland Rockmaster pickers weigh about 7½ tons. They have up to a 12-foot picking swath and a 10-foot unloading height. These machines are reinforced and braced throughout to hold up under the most rugged conditions. Tractors in the

class of the Caterpillar D8 or the Allis Chalmers HD-20 are recommended for pulling these machines.

For further information write to the company, or use the Request Card at page 18. Circle No. 455.

### Lightweight Chain Saw

■ A new chain saw powered by a 3.5-hp two-cycle engine features a specially tempered 16-inch guide bar with a high-speed chain. The chain is lubricated by an automatic oiler.



The saw is equipped with large grip-size handlebars, an automatic clutch, float-type carburetor, rewind starter with nylon rope, and a specially designed frame.

For further information write to Lancaster Pump & Mfg. Co., Inc., P. O. Box 778, Lancaster, Pa., or use the Request Card at page 18. Circle No. 443.

### Booklet Covers Products Of Corrugated-Metal Line

■ The products and services offered the construction industry by Armco Drainage & Metal Products, Inc., Middletown, Ohio, are covered in some detail in a new booklet.

The booklet tells the advantages of using Armco corrugated-metal pipe structures, liner plates, Multi-Plate structures, perforated pipe, and welded steel pipe. Other products in the line include steel sheeting, bin-type retaining walls, bridge plank, Flex-Beam guardrail, and Steelox prefabricated panel buildings.

The company's construction service is also described briefly.

To obtain Bulletin P. O. 8954 write to the company or use the Request Card at page 18. Circle No. 428.



## Turnpike tests Transmissions

Contractor D. W. Winkleman is building two stretches of the Ohio Turnpike . . . working in rough, wet cuts, his ten Model C Tournapulls are doing a major share of the 7,300,000 cubic yard excavating job. On this operation the distance from cut to fill is over a mile and a half . . . the Tournapulls make the round trip of over 3 miles in just under 22 minutes. Fuller Model 5-A-1120 Heavy-Duty transmissions are putting every

"Horse" of the 186 hp diesels into the job. In this contest of "scrape . . . load . . . haul . . . return" Fuller 5-A-1120 transmissions gear the Tournapulls with the right ratio for each load and grade condition.

The performance of Fuller geared equipment working in every major industry in all types of on- and off-highway service has been so outstanding that leading truck and equipment manufacturers standardize on Fuller

transmissions in their vehicles.

From more than 110 different models available for rubber-tired equipment from 100 to 400 hp; engines from 330 to 1440 cubic inches . . . there is a transmission designed with your job in mind. Specify a Fuller transmission for your equipment.

where horsepower <sup>really</sup> goes to work



FULLER MANUFACTURING COMPANY (Transmission Division), KALAMAZOO, MICHIGAN

Unit Drop Forge Division, Milwaukee 7, Wis. • Shuler Axle Co., Louisville, Ky. (Subsidiary) • Western Dist. Branch (Sales & Service, All Products), 641 E. 10th St., Oakland 6, Cal.

### ECONOMY Steel Forms

for concrete construction

available on a RENTAL BASIS



Use this nation-wide form rental and supervisory service for your concrete forming needs. Saves time, labor, material. For complete details . . .

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CONTRACTORS AND ENGINEERS



## Padded Crawlers Let Paver Work on Concrete Without Marring Surface

■ Paving operations can be speeded up considerably through the use of rubber-covered crawler pads on paving machines. Such pads permit the movement of pavers over finished concrete without danger to the surface. Since it is not necessary to lay belting or planks under the crawlers, labor expense is reduced substantially.

These pads are made of steel plates  $\frac{1}{4}$  inch thick and usually about 8 inches wide  $\times$  15 inches long, with a covering of tough pliable rubber on one side. The rubber and steel are joined together by the B. F. Goodrich Vulcalock bonding process. The rubber covering may be from  $\frac{3}{4}$  to 1 inch thick, depending upon requirements and the clearance on the paver. The pads are attached to the crawlers by four  $\frac{1}{2}$ -inch-diameter carriage bolts through the holes in the crawler shoes, or through specially drilled holes.

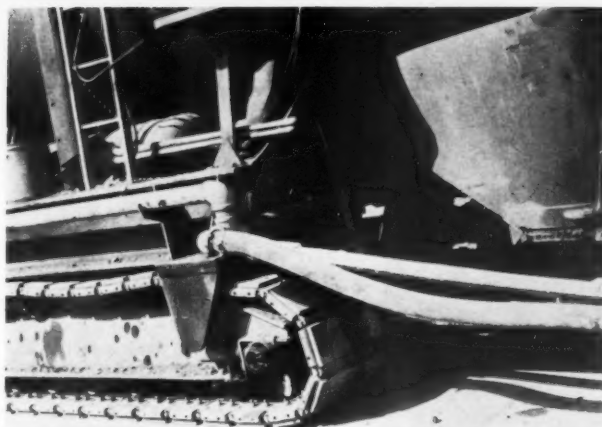
Intended for finished roadbeds only, the pads, of course, cannot be used where sharp rocks and stones would damage the rubber coating.

For further information on this process, write to the MW Protective Coatings Div., Metalweld, Inc., Scotts Lane and Abbottsford Ave., Philadelphia 29, Pa., or use the Request Card at page 18. Circle No. 496.

## Dry-Type Air Filter for Diesel and Gas Engines

■ A new line of dry-type air filters for diesel and gasoline engines has been announced by Purolator Products, Inc., Rahway, N. J. Designed for truck and tractor use, the Micronic air filters are smaller, lighter, and less expensive than conventional oil-bath and oil-wetted types, according to Purolator. The Micronic element of the new filter is of resin-impregnated convoluted cellulose.

For further information write to the company, or use the Request Card at page 18. Circle No. 448.



◀ Rubber-coated steel pads on the crawlers enable this paver to travel over finished concrete without marring the surface.

## Report on Performance Of New Concrete Chisel

■ A new Vulcan pavement-breaking tool that is reported to work faster and stay sharp longer than usual is described in a bulletin from Vulcan Tool Mfg. Co., 35-43 Liberty St., Quincy 69, Mass. According to the brochure, results of actual field tests with the Superkut chisel show that it breaks concrete 50 per cent faster than previous breaking tools. It is explained that the wedging action of the Superkut enables it to cut through heavy mesh or reinforcing rods without fouling or jamming. The tool is also said to do a quicker job on asphalt, brick, or cobblestone pavement, reducing worker fatigue.

To obtain literature on this tool write to the company or use the Request Card at page 18. Circle No. 421.

**LOOKING AHEAD**  
to greater highway safety...



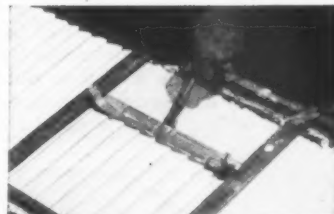
## White concrete reflecting curb leads the way

An unseen curve, a poorly lighted interchange—these are potential causes of accidents. That's why night drivers need all the help they can get. You can help them by specifying White Concrete Reflecting Curbs made with Atlas White Cement for your new highways.

These special curbs are designed to make it easier for drivers to see where they are going. By day, they stand out in marked contrast to the darker highway pavement. After dark, they become brilliant ribbons of white. Their saw-tooth faces catch

headlight beams and reflect them back to the driver. Wet or dry, they give early warning of approaching hills, curves, and bridges. In fact, rain increases their "mirror action," makes them even easier to see.

No wonder more and more engineers are specifying White Concrete Reflecting Curbs for greater highway safety. Why not investigate them for your next project? For complete information, write to Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.



**PLACEMENT IS EASY** with Atlas White Duraplastic® Cement. One method is to place a mortar mix of this air-entraining white cement on a grey cement concrete base, screed to 1-inch thickness and score with a hand tool. Contractors prefer Duraplastic because it makes a more plastic, more workable mix.

\*"Duraplastic" is the registered trade-mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.

**ATLAS® WHITE CEMENT**  
For Concrete Reflecting Curb and Markers



C&E-CB-81

UNITED STATES STEEL HOUR—Televised alternate weeks—See your newspaper for time and station.

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### Maneuverability, Power, and New Attachments Give Loader Versatility for Full Tractor Service

■ The Eimco 105 tractor-loader, introduced about a year ago as a tractor-loader with several important operating innovations, has since been equipped to mount attachments that have broadened its use to full tractor service. The 105, powered by a 124-hp diesel engine with matched torque converter, develops a drawbar pull of 32,300 pounds with dozer attachment, or a maximum of 45,000 pounds for zero track slippage.

By equipping the 105 tractor-loader for bulldozing, Eimco here increased the versatility of the machine. Note the operator's position.

To take full advantage of this power, Eimco now offers both straight and angling hydraulic and cable bulldozer blades for the basic tractor in addition to the original loading attachments. Built to standard SAE mounting dimensions, the prime mover will also mount any attachment made with standard SAE drilling.

The new unit weighs about 18 tons equipped with a bulldozer, and is heavy enough to take the excessive loads of attachments operating at unusual angles. A track width of 24 inches keeps ground pressure low for safe work on soft unstable ground.

The tractor features several innovations in design and construction that make it an unusually maneuverable and versatile machine. Eimco's Unidrive transmission lets the operator shift gears under full power while the tractor is in motion. With independent track control, one track may run forward while the other runs in reverse.

Two small levers, one for each track, control forward motion, instant reverse, or any degree of turn from a spin to a feathered turn. This arrangement has taken manual clutch operation out of the picture as far as steering is concerned. The clutches themselves never need adjustment, and the master clutch has been completely eliminated. Adding to the ability of the tractor to work under difficult ground conditions is full track oscillation, which is available even with the attachments mounted.

Good visibility for the operator is another factor that contributes to the working characteristics of the machine. In his position up front, the operator can see everything he is doing with the blade or loader.

For further information write to Eimco Corp., 634 S. Fourth West St., Salt Lake City 10, Utah, or use the Request Card at page 18. Circle No. 449.

### Grating and Stair Treads

■ A new bulletin describes the complete line of Tri-Lok interlocked and Tri-Forged welded grating and stair treads. The line is offered by Dravo Corp., 1203 Dravo Bldg., Pittsburgh 22, Pa.

Photographs and detail sketches illustrate the many styles available as well as typical installations and applications. Information on serrated grating, armoring, and flooring is also included in the bulletin.

To obtain this literature write to the company or use the Request Card at page 18. Circle No. 422.

# Look under the hood!

On now - Truck Event of the Year -



## HOODS UP SHOWDOWN!

A new type short-stroke engine design is revolutionizing truck performance. Ford, and only Ford has it in every model!

It's the automotive news of the year! First the car industry goes short-stroke V-8. Now the truck industry begins to follow suit. Small wonder! This new engine design increases piston ring life up to 53% . . . saves up to 1 gallon of gas in 7

. . . reduces engine friction as much as 33% for more usable power . . . gives longer engine life.

Ford—pioneer in V-8 truck power—has had Short Stroke V-8's on the road for three years. Today, only Ford offers an "on-the-job" tested, money-saving Short Stroke engine in any truck model you choose . . . with 4 Short Stroke V-8's and a Short Stroke Six.

**Look under the hood!** Be sure your next truck doesn't have an old-type, *long-stroke* engine that may be outdated before it earns its keep. Get the facts at your Ford Dealer's Hoods Up Showdown . . . now!



Short Stroke power to roll the heaviest loads on long or short hauls with amazing speed and economy. New Ford T-800 Tandem Axle Big Job with 170-h.p. Short Stroke V-8. Power Steering standard. New 11,000-lb. front axle at extra cost. 40,000 lbs. GVW, 60,000 lbs. GCW.

**FORD**  
**Triple Economy**  
**TRUCKS** THE MONEY MAKERS FOR '55

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Special Investigations for Dams, Turnpikes and Airports.

710 North Brookfield, South Bend 28, Ind.

CONTRACTORS AND ENGINEERS





This new industrial puller, marketed by Snap-on Tools Corp., Kenosha, Wis., simplifies many maintenance operations.

### Heavy Bar-Type Pullers

■ A heavy bar-type industrial puller recently announced by Snap-on Tools Corp., Kenosha, Wis., provides up to 50 tons of pulling power. The equipment is recommended for jobs such as loosening and removing rusted or tightly-fitted gears, pulley wheels, or similar parts.

The yoke is machined from 2½-inch square stock and is 16 inches long. The grooves for the side rods extend to within a short distance of the center pressure screw, so that objects which have openings or tapped holes a minimum of 6 inches apart, center to center, can be pulled. The side rods are threaded at both ends for greater ease in setting up the puller. Two short extension rods, 9 inches long, and two long extension rods, 18 inches long, are included in the set. If additional reach is required to remove an object set far back on a shaft, the rods can be threaded together by connecting nuts.

For further information write to the company, or use the Request Card at page 18. Circle No. 475.

### Building Methods Using Lightweight Aggregate

■ A booklet that outlines uses, installation procedures, and specifications of vermiculite products in lightweight concrete and plaster construction is available from the Zonolite Co., 135 S. LaSalle St., Chicago 3, Ill.

One section of the booklet reviews basic aggregate requirements for lightweight construction and compares them with vermiculite aggregate properties. Also included is a summary of fire tests and ratings for various structures utilizing vermiculite, and an outline of plaster fireproofing advantages.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 530.

### DRILLING CONTRACTORS

**Diamond and Shot Core Borings, Dry Sample Borings, Grout Holes and Pressure Grouting, Foundation Testing for Bridges, Dams and all Heavy Structures**

Leading manufacturers, also, of High-Speed Diamond Drilling Machines and Complete Accessory Equipment, including all types of Diamond Drilling Bits.

Write for Catalog No. 320

**SPRAGUE & HENWOOD, INC.**

Dept. C, Scranton 2, Pa.

### Report on Gravel Tests

Results of tests on Indiana gravels ranging from good to poor in field performance in portland-cement concrete are contained in a bulletin, "Deleterious Constituents of Indiana Gravels", now available from the Highway Research Board. D. W. Lewis, research engineer, and Eduards Venters, research assistant, both of Purdue University's Joint Highway Research Project, are authors of the paper, presented at the 33rd annual HRB meeting in January, 1954.

The paper discusses separation of the gravels into various specific-gravity ranges and their examination for absorption, degree of saturation, lithologic composition, and durability in air-entrained cement.

Priced at 30 cents, Bulletin 94 may be obtained by writing the Highway

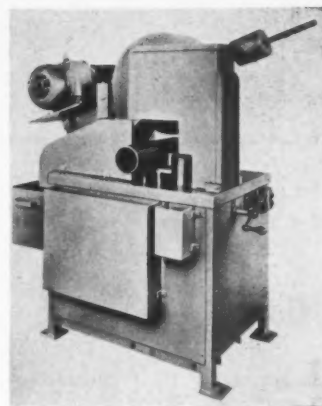
Research Board, National Academy of Sciences Bldg., 2101 Constitution Ave., Washington 25, D. C.

### Abrasive Machine Cuts Solid Steel and Channel

■ A new dry abrasive cutting machine is designed to handle material up to 4 inches square at 90 degrees to the axis for solid steel and 8 inches at 90 degrees for channel steel. Cutting speed is approximately 3 seconds per square inch of material cut. These specifications are based on the use of an 18-inch-diameter cutting wheel with a 10-hp motor.

The new Sever-All is an oscillating-type machine, so that the amount of abrasive wheel contact is reduced and the cutting is done with a minimum of pressure on the abrasive wheel.

For further information write to



American Chain & Cable Co., Inc., 929 Connecticut Ave., Bridgeport 2, Conn., or use the Request Card at page 18. Circle No. 411.

## ROEBLING ANNOUNCES TO AMERICAN INDUSTRY IT'S NEW ROYAL BLUE WIRE ROPE...



**STRONGER THAN YESTERDAY'S STRONGEST!  
VASTLY INCREASES — EVEN DOUBLES — SERVICE LIFE!**

WITH THE DEVELOPMENT of Roebling type 1105 wire — the finest high carbon rope wire ever produced — Roebling leads the field in bringing American industry the unprecedented efficiency and economy inherent in its new **ROYAL BLUE** Wire Rope.

★ Roebling is ready to supply the new **ROYAL BLUE** Wire Rope in **EVERY DIAMETER** from ¼" to 3½" and in **EVERY STANDARD CONSTRUCTION** with an independent wire rope core.

★ Roebling guarantees **ROYAL BLUE** Wire Rope to be at least 15% stronger than any standard wire rope of the same size and construction formerly available.

★ Roebling **ROYAL BLUE** Wire Rope has unequalled resistance to impact, crushing, abrasion and fatigue.

Write us for the full story on **ROYAL BLUE** Wire Rope, or contact your distributor or nearest Roebling branch office.

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## Good business methods are contractor's tools

**Kitchell-Phillips of Phoenix put some modern financial methods to work and built a \$4 million-a-year construction company**

Last summer the Mountain States Telephone & Telegraph Co. moved into a brand new \$1 million office building in downtown Phoenix, Ariz. The building was the last word in modern architecture, and had been designed expressly for the utility company—but MST&T had not invested one cent in the project. The company simply moved into the building, by-passing all the headaches that go with constructing to meet one's needs, and paid the first month's rent.

This package project was the work of Kitchell-Phillips Contractors, Inc., a young Phoenix building firm that is making construction history in the state of Arizona. By introducing a strictly modern concept of construction operations—in short, by using all the tools of modern business—this firm has shouldered its way right into the thick of competition since its organization in 1947.

Some figures will illustrate the company's present position. In a recent Dun & Bradstreet review of the construction industry, a typical sampling of 153 contractors showed an average net profit on net working capital of 20.57. Kitchell-Phillips showed 44.9 for the same period. When current assets to current debts was considered, however, the Dun & Bradstreet average was 2.95, compared to 1.53 for K-P. Somewhere in these two sets of figures is the story of a better way of practicing the construction business. A firm that started out building comparatively simple structures like homes and small buildings only to find itself doing a gross business of \$4 million annually seven years later isn't exactly standing still.

What has skyrocketed this young firm to a position of growing prominence and prestige is simply a new emphasis on factors which, while always present in the construction business, are too seldom recognized. Those factors are business volume, precision, and dependability.

In a business whose very focal point is guesswork, estimating can be a mighty important factor. Over the last five years, K-P's estimates on such intangibles as labor have been between 90 and 95 per cent correct. Estimating generally is so accurate that there are few mistakes in other phases—ordering concrete, for example, or scheduling the finish of a job. In fact, split-second timing and a fast work tempo have become trademarks of a Kitchell-Phillips project.

### Meet the Bosses

There is a unique combination of brains and diversified talent behind the Kitchell-Phillips organization. President-treasurer James B. Phillips, is a product of Yale and the Harvard business school. He is not an engi-

neer, but he does know finance. Some neglected tools of the contractor—the bank, the bonding company, and the legal counsel—are put to good use by this executive.

Samuel F. Kitchell, secretary and general manager, heads operations.

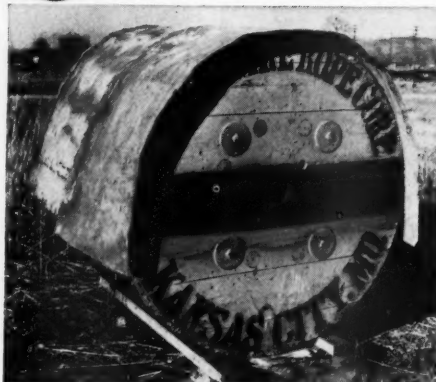
Like Phillips, he is not an engineer, but his experience after college included specification writing, cost estimating, and other work directly related to construction. Both he and Phillips are in their 30's.

The third member of the firm—

and equally important to its success—is vice president William R. Atkin, who assumes responsibility for all engineering estimates. In that capacity, he is the man who keeps the all-important business volume coming in. It's Atkin, with his background in

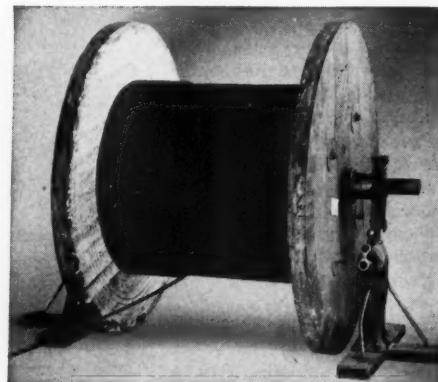


## Tuffy tips on getting



**Store Rope Like This**

Keep spare rope in a dry, sheltered place free of dust, vapors or fume-laden air. If stored out of doors, set reel on blocks off the ground. Clear away weeds and grass and protect with a waterproof covering as shown. Check each month for rust caused by moisture collecting on the rope. Paint with a heavy crankcase or cylinder oil if rust is discovered or even before it shows up if moisture is present.



**Unwind Like This**

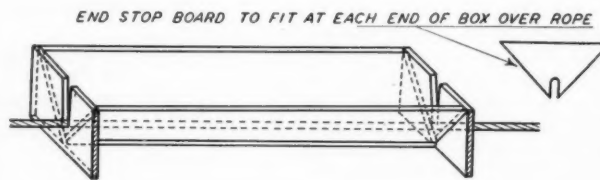
When getting ready to install the rope, special care should be taken to see that the reel is set up for smooth, easy unreeling. Set reel up on jacks as shown above and unreel so the rope pulls off from the bottom of the reel—not from the top. Coils should be put on a swift or rolled on the ground to pay off the rope. Kinks or "doglegs" may result from incorrect unreeling, seriously damaging wires of the rope and greatly reducing the ultimate life.

### Always Keep Rope Lubricated

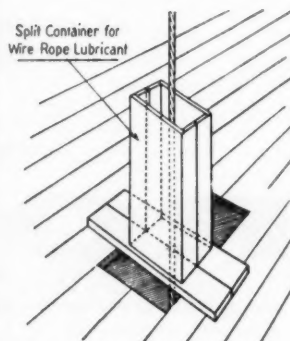
Rope That Is Stored for long periods of time should be lubricated during installation. If it is not possible to lubricate stored rope very often, apply a sealing compound to hold the lubricant that is already present.

Rope In Use can be lubricated most economically without removing it from the equipment on which it is operated. Lubricate rope as often as it needs it—service conditions determine the frequency.

Use Lubricant Hot or Cold, depending on its penetrating qualities. Your local oil company engineer will be able to recommend an oil that will actually penetrate to the working parts of the rope, and not just form a coating that peels off the first time your rope runs through a sheave.



### Two Home-Made Oiling Devices



These two oiling devices can be used without removing the wire rope from the equipment on which it operates. One is for vertical ropes, the other for horizontal ropes.



The business heads behind Kitchell-Phillips Contractors, Inc., Phoenix, Ariz., look over plans for a project. Left to right: Sam Kitchell, secretary and general manager; Bill Atkin, vice president; and Jim Phillips, president and treasurer.

Ray Day Photo



civil engineering, who is the real construction man in the organization. Atkin did important estimating for such firms as the Austin Construction Co. in Seattle, Morrison-Knudsen Co., Inc., in Boise, and other large firms before heading up his own busi-

ness in California. He joined Kitchell-Phillips because the Phoenix company's future looked good.

How does an old-time construction man fit in such a streamlined setup? Fine, say all three men. Kitchell and Phillips swear they would be lost

without Atkin. He, on the other hand, says that fewer construction concerns would be in financial difficulty if they had the benefit of business training which Kitchell and Phillips have introduced.

It's the application of these diverse talents to its construction market that has helped bring Kitchell-Phillips from small school projects to such jobs as the multimillion-dollar AirResearch Test Center at Phoenix. Licensed in Arizona, California, Nevada, and Utah, the firm has sufficient bidding flexibility to keep the jobs coming in. Generally speaking, however, the outfit has concentrated its work in its home state. The exception of prime importance was a \$1,800,000 rehabilitation job at Camp Irwin near Barstow, Calif., several years ago. Extra work items ran into a nice profit on that job and helped the company off to a running start.

#### Financing

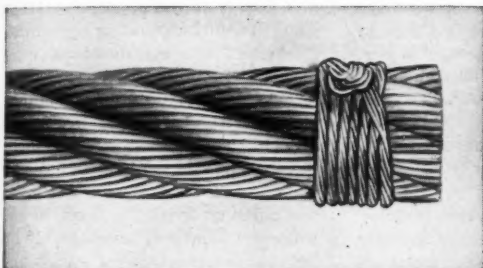
Despite the fact that Kitchell-Phillips is still a modest-sized outfit, its financial structure is unusually sound. The firm regularly takes its discount by paying bills promptly, and a 60-day bill is practically a nonentity. Subcontractors on a Kitchell-Phillips operation usually make arrangements to be paid when K-P gets its money, but in the case of small outfits just getting started, the company has made exceptions by paying ahead of time.

What Phillips has done with the company's available working capital sets the firm somewhat apart from its competition. The Arizona state average for the ratio of bondage to working capital is about 7 to 1, but Kitchell-Phillips regularly operates at a 10 to 1 ratio. Phillips oversimplifies this financial wizardry by saying, "All we're doing is turning our available dollars a little faster than is customary in this business."

The company has a little more than \$100,000 of working capital at present, besides a floating capital reserve with Valley National Bank Co. of Phoenix of \$100,000. Often the cash reserve at Valley National Bank is partly unused, but even so the company manages to keep a current \$4-million volume of work under way. That's heads-up financing in anybody's language.

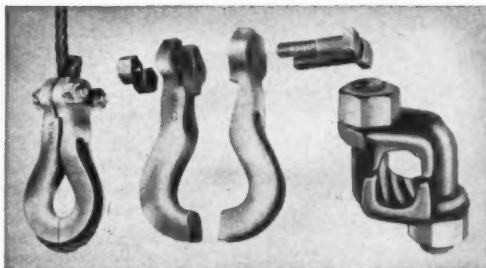
Financial secrets, if there are any, center around a meticulous attitude on Phillips' part regarding the accuracy of day-to-day records. Finan-

## extra service from Wire Rope



### Seize Tightly For Cutting

Cutting can throw the strands out of fabricated position and, in time, result in kinks or doglegs. Seizing the rope securely before cutting, as shown above, assures that no movement of the strands can occur when you make cuts. Because most ropes are now preformed, and stress free, only one seizing wire at each side of the cut is needed.



### Attaching By Clipping

The fittings you use on wire rope can handicap it or enable it to work at full efficiency. Fittings which derive holding power by crimping action are harmful to the rope. Shown here are two rope clamps. One is a combination clamp and thimble. Both provide snug saddling of the rope and grip larger and uncrimped bearing surfaces so tightly that the loads are carried almost solely by the force of friction.

### Available To You: The Wire Rope Experience of Specialists

Working with users to whip wire rope problems has provided Union Wire Rope engineers a wealth of on-the-job experience. Out of this priceless experience has come a family of wire ropes for special purposes.

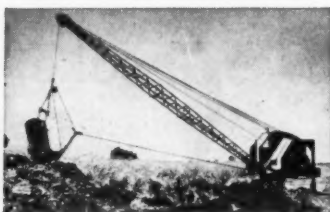
Into them is put the grade of steel, the rope construction and operating characteristics which laboratory research and field development have proved best for the particular purpose for which made.

## Forget Complicated Specifications - Say Tuffy



### Tuffy Scraper Rope

Special construction assures resistance to drum crushing and the strains caused by angle pulls through swivel-mounted sheaves, rapid line and shock of load on slack line.



### Tuffy Dragline

Outer wires offer large area to resist abrasion . . . inner structure made for flexibility. The result is a rope that casts freely, fights off shocks and line pulls.



### Tuffy Dozer Rope

Get extra dozer rope service - mount a 150' reel of Tuffy on your dozer, feed through only enough to replace damaged section on the drum. 1/2" and 9/16".



### Tuffy Slings & Hoist Line

Machine braided slings that consistently keep costs down, keep safety records clear. A tough, flexible hoist line. A balanced team.

### Your Tuffy Distributor Works to Learn Your Business

When new equipment comes out, he has already checked into it . . . finding out why it does the job better, how it works. Why? Because he's interested in earning your continued patronage. And part of that service is helping you out with fast answers when you need them—especially right answers to your wire rope problems. Give him a call.

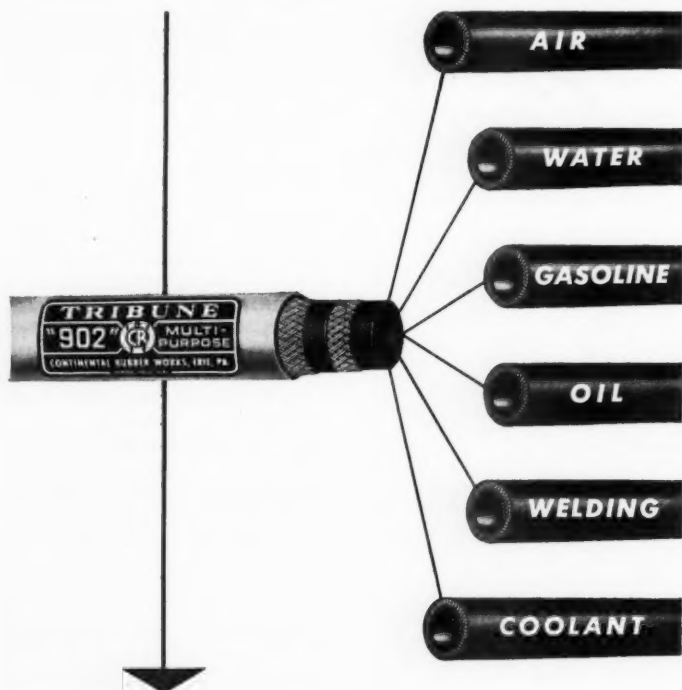
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Specialists in High Carbon Wire, Wire Rope and Braided Wire Fabric



A recent addition to the Kitchell-Phillips equipment fleet is this Allis-Chalmers tractor with Baker Gradebuilder and Hopto backhoe. ►



## This ONE Hose Does All SIX Jobs

### How to simplify your hose buying

Why buy and stock 6 different hoses when *one* will do the trick? Continental's "902" is a versatile, all-purpose hose. It gives outstanding service for air, water, gasoline, oil, welding or coolants. Truly, a "jack of all" hose-jobs... yet master of *all*.

Continental "902" Multi-Purpose Hose is all neoprene. It's light weight, flexible, non-kinking, easy-to-handle. In a range of sizes, this *one* hose will handle 90% of your needs.

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(Continued from preceding page)

cial charts are kept which show at a glance when points of greatest financial strain are bound to occur. It's up to the team at that time to make sure that enough revenue comes in from somewhere to meet the financial crises. Overhead, at the present time, is running approximately \$10,000 a month, and that includes no dead wood.

For tax purposes, the company has been separated into three distinct branches; Kitchell-Phillips Contractors, Inc., an Arizona concern; Kitchell-Phillips Equipment Co.; and Kitchell-Phillips Construction Corp., which is strictly a California venture. Few contractors use expert accounting and legal services in this regard. The young heads of K-P have accountants and an attorney on regular call.

Springing from this financial background are innovations in job selling and business conception. A modest construction firm like K-P can seldom think of designing, constructing, managing, owning, and leasing back a large industrial building at no cost to the occupant, but that's exactly what happened in the case of the million-dollar Mountain States Telephone & Telegraph Co. building in Phoenix. The usual method, of course, in the construction of these buildings is for the owner to earmark funds for the construction cost, to engage an architect, and eventually after months of planning to let the construction contract.

It has long been Kitchell-Phillips' policy that most industrial firms are in business for one thing: merchandising and manufacturing. Under today's tax structure, it might be much simpler all the way around for large firms to have special facilities constructed under lease-back arrangements. That would put design, construction, and management in the hands of one contractor.

Advantages of the idea are obvious. The industrial firm gets exactly what it needs in the way of a functional

and yet beautiful structure. The contractor, bidding competitively on a per-square-foot-per-month lease-back basis, is forced to an excellent grade of construction at the lowest possible cost. Moreover, control of the building design then becomes a joint matter between the contractor and the owner, all of which tends to discard expensive "gingerbread" and to develop more functional practical designs.

Phillips is hammering hard on this theme. It worked very well in the case of the Mountain States Telephone & Telegraph Co., and he knows it will work again.

Meanwhile, the firm is anything but idle along conventional lines. A number of schools were built on a straight competitive-bid basis. The firm did several sizable cotton warehouses at Litchfield Park, Ariz. Motorola's new Phoenix headquarters building was a K-P product, and the latest sizable building, of course, is the enormous AResearch Center, that is located near the east edge of the city.

Recently, one of the partners got the idea that the firm would have a financial bidding edge, particularly on remote building jobs away from Phoenix, if it owned certain small pieces of utility excavating equipment. The result was the formation of a utility division within the company. It bids water lines, sewers, gas-pipe installations, and similar jobs. That division turned out to be four times more profitable than straight building construction work. It has also given the building division a boost in the process by making available small but important pieces of excavating equipment.

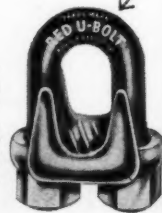
Basically, K-P's costs are the same as those of any other contractor. It's simply that the K-P theory of "feeding the furnace" with a definite volume of steady business is working out, particularly since it's governed by the application of modern cost accounting and day-to-day financial control. K-P's management never has to wait until a job is over to find out what

Here's what experienced riggers say:

for safety's sake we use  
**Genuine CROSBY CLIPS**



LOOK FOR THE RED-U-BOLT



For absolute wire rope safety on the job, insist on CROSBY CLIPS to safeguard men and equipment. They're drop forged for maximum strength and hot-dip galvanized for extra durability.

CROSBY PRODUCTS DIVISION  
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its profit was. It knows at every stage.

#### Operations

K-P's second important management division is operations, under Sam Kitchell. At first glance, this part of the firm might be regarded as somewhat divorced from the financing and business-getting ends, but that's not the case. The function of operations is to search for and apply cost-cutting methods and techniques, and above all, to set up and maintain almost a crash tempo on any K-P job.

According to Kitchell, the maintenance of a fast high-geared construction tempo is one of the surest ways to wind up a job with good work and a good profit. K-P's jobs are geared accordingly. Few of the jobs, for example, have foremen. That's because many of the jobs K-P bids don't run very heavy in direct labor costs. The AIREsearch building, which involved a \$2,700,000 joint-venture contract with the Utah Construction Co., Salt Lake City, was 75 per cent mechanical and electrical. In such cases, K-P eliminates foremen's jobs from the staff and concentrates on getting a good superintendent. A good superintendent can personally organize and direct the work of several small crews—particularly around a building—and can at the same time coordinate the work of the subcontractors.

But this leaves one big gap. One of the important functions of a superintendent is to expedite the many little details which go into the construction of a building. K-P helps its superintendents in this regard by having on its office overhead payroll two experienced able expeditors who can take this load off the superintendents' shoulders. These are men with long experience in construction, men who can do more in 10 minutes with a telephone and a pickup truck than some superintendents or foremen could do in a day's time. A rare esprit de corps has been built up between the various superintendents

and the two expeditors so that these men work very closely together.

One of the big reasons why K-P jobs invariably finish on time is that these expeditors have held steady pressure on suppliers of material, subcontractors, and others to move the components of a building in just ahead of the time those components are needed.

Not a small part of operations is the constant reappraisal of building methods currently in use by the company. At the present time, the firm gets a little better competitive edge by doing most of its own work. Concrete placing, certain phases of excavation, placement of structural steel and even such items as masonry or plaster has been done by men hired by K-P, and supervised by one of their superintendents. But each job is different, and if it's financially more advantageous to hire a specialty contractor for that work, that is done without hesitation. It's a K-P rule-of-thumb that anything will be adopted if it gives the firm better control of the job and if it represents a direct or indirect financial advantage to the owner.

#### "Feeding The Furnace"

Closely integrated with operations and the financial-legal-accounting end of the business is Bill Atkin and his "feed the furnace" department. It's Bill Atkin's job to secure sufficient successful low bids to provide the firm a dependable flow of profitable business. Atkin introduced the same type of detailed accuracy to estimating that Kitchell and Phillips have brought to the other divisions. He uses a systematic check-off system in estimating, thus guarding against the possibility of forgetting an important item. Generally speaking, he tries to bid on something about once a week, and he considers that he is doing fine if he lands about one job in ten.

When K-Ps managers speak of Atkin's work they call it "feeding the furnace" with sound reason. That

(Concluded on next page)



◀ The newly formed utilities division of Kitchell-Phillips uses an Owen-Pewthers Earthripper on a Ford F800 truck to dig a sewer on the Chandler job.

### JOB AFTER JOB, FRANKI FOUNDATIONS SAVE TIME, TROUBLE and MONEY!



## SAVE TIME, MONEY, LABOR WITH THESE STURDY PUMPS

★Just turn the high pressure hose on that heavy equipment for a quick clean-up. The solid, hard, driving, high pressure stream from a Hardie Powered Pump Unit will strip off the caked mud, grease, dirt—even that "behind the ears"—in a matter of seconds.

★The Hardie Spray Gun is readily adjustable by a pressure of the fingers from solid stream to a high pressure spray for over-all washing, or a fog like mist for fragile things and fog fire fighting.

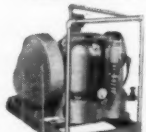
★Hardie builds powered pump units in many sizes and models. Enclosed units from 5 gpm at 300 psi to 24 gpm at 400 psi. On casters or skid mounted units up to 60 gpm at 800 psi. Handle all liquids, chemicals, semi-liquid materials. All Hardie pumps are trouble-free, rugged, vertical piston-type pumps that work to their ratings smoothly, quietly, at slow speed.



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Model LC—Delivers  
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WRITE  
FOR COMPLETE  
SPECIFICATION  
DATA

Original foundation specifications for a modern catalytic cracking unit for Socony-Vacuum's East St. Louis Refinery called for 30-ton pre-cast concrete piles. The Lummus Co., of New York City, the consulting engineers, substituted Franki Displacement Caissons because extremely heavy vertical loads and high up-lift conditions had to be met.

A total of 119 Franki Displacement Caissons were installed, each providing a vertical load capacity of 120 tons and up-lift resistances up to 50 tons per unit. The Franki method made it possible to greatly reduce the cap concrete and install the foundation to shallower depths. Result: The Lummus Co. saved valuable time, trouble and materials, and Socony-Vacuum saved \$30,000!

Write to Franki Foundation Co., 114 E. 40th St., N. Y., for brochure describing Franki Methods and "Franki Facts" on this job.

#### FRANKI METHOD SAVED...

U. S. AIR FORCE  
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\$200,000

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\$7,500 ... to name a few!

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FRANKI INSTALLATION PROCEDURE

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FOUNDATION COMPANY

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FIRM FOUNDATIONS FOR OVER FORTY YEARS

(Continued from preceding page)

department is so well planned and so well integrated in the over-all plan that estimating and bidding is a fixed and continuing operation. In other words, getting next month's work is regarded as just as important—if not more so—than taking care of this month's job. An interesting \$405,000 Corps of Engineers weather station is being built on a mesa above Winslow, Ariz., by K-P. That job had its beginning in one of the firm's financial conferences. Operations and bidding both decided that certain knowledge of cold-weather construction in the company's hands gave it a bidding edge. A successful bid was prepared on that basis. That job is now one of several which is stoking the K-P furnace.

For men who have had little or no

construction experience, the young owners of this company have carved a profitable place for themselves in the west's construction business. Kitchell-Phillips is expanding rapidly, and its owners give no indication that they will be limited by any horizons.

It seems reasonable, then, to expect to hear a good deal more from Kitchell-Phillips Contractors, Inc., the modern construction firm.

THE END

#### Austin Appoints Baker

The Austin Division of Central Ohio Steel Products Co., Galion, Ohio, has appointed Floyd Baker western regional sales manager for states west of the Mississippi River.

Mr. Baker will make his headquarters at 2 Santa Fe Drive, Denver, Colo.

#### Gear Lubricant Packaged in Spray Dispenser

■ Spraying a lubricant on open gears, chains, valve stems, and other machinery parts offers a number of advantages over brush and paddle methods, according to Pressure Products Co., manufacturer of Spray-Lube. Sprayed from an Aerosol dispenser under pressure, Spray-Lube is applied without pre-heating and will reach parts that are often inaccessible with usual lubricating methods. The spray lubricant can be used in temperatures too high for normal grease or oil and will not drip or be thrown off running gears.

The manufacturer emphasizes that because Spray-Lube lubrication is relatively effortless, it tends to encourage proper lubrication of machinery that might otherwise be neglected.



Packaged under pressure in a handy dispenser, Spray-Lube simplifies lubrication of open gears.

For further information write to Pressure Products Co., P. O. Box 343, West Chester, Pa., or use the Request Card at page 18. Circle No. 520.

#### Cummins Sales & Service Opens Branches in Texas

The addition of the Dallas and San Antonio branches in Texas brings to 13 the number of Cummins Sales & Service, Inc., facilities serving the central section of the United States.

The Fort Worth, Texas, firm has a shop and factory-type branch in Dallas at 7919 Harry Hines Blvd., and the San Antonio branch is on the Southwest Military Drive south of the city. District managers of diesel sales and service for the respective

branches are D. M. Peacock and Jim Van Dyke.

The Dallas shop, with 12,500 square feet of office and work space, is staffed by eighteen employees. Arvil Jarmen is service manager for the branch and G. M. Jackson is store and parts manager. The San Antonio shop has 6,500 square feet of working space. At this shop, L. B. Slimp is store manager, and F. M. Sells, service manager.

## Best way to achieve SPECIFIED DENSITY in



**ROCK, SLAG, SOIL-BOUND MACADAM, GRAVEL and SAND BASE COURSES**

use...

## JACKSON VIBRATORY COMPACTORS!



On jobs such as this, soil-bound macadam—5 inches thick, the JACKSON MULTIPLE COMPACTOR, now more powerful than ever, achieves specified density in JUST ONE PASS. It is equally efficient on rock, or slag base and all other granular soils.

Quickly adaptable to widening, the JACKSON MULTIPLE COMPACTOR is shown here consolidating slag macadam base course 36 inches wide and 9 inches thick. Using three of the machine's powerful compactor units in tandem, it readily obtains specified density in ONE PASS.

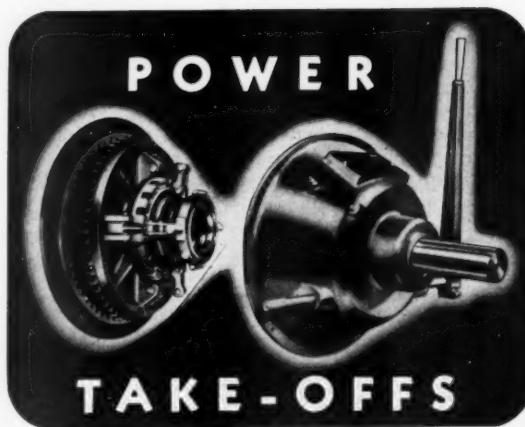


Twin hook-up of manually guided JACKSON COMPACTORS consolidating gravel base for a large pavement repair area. These machines, used singly or in tandem, or side-by-side twin hook-ups, are exceedingly efficient for all types of granular soil base and fill compaction; also for bituminous patching and driveway construction. Operated from a trailer-mounted JACKSON POWER PLANT which may also be used for other power tools and lights.

See your Jackson Distributor or write to us for complete information on these machines.

**JACKSON VIBRATORS, INC.** LUDINGTON, MICH., U.S.A.

## ROCKFORD



### FOR GASOLINE AND DIESEL ENGINE APPLICATION

**SELF CONTAINED UNIT**  
**WIDE RANGE OF SIZES**  
**CONSERVATIVE RATING**  
**ROLLER BEARINGS**  
**FINE ADJUSTMENT**  
**ACCURATE BALANCE**  
**S.A.E. DIMENSIONS**

\* The housing supports the drive shaft, which is mounted on a main bearing in the housing and a pilot bearing in the engine flywheel. The heavy-duty clutch is mounted on the drive shaft, which is extended to serve as the output shaft for the external drive, and may carry a pulley, gear, sprocket, or drive through a coupling.

**Send for This Handy Bulletin**

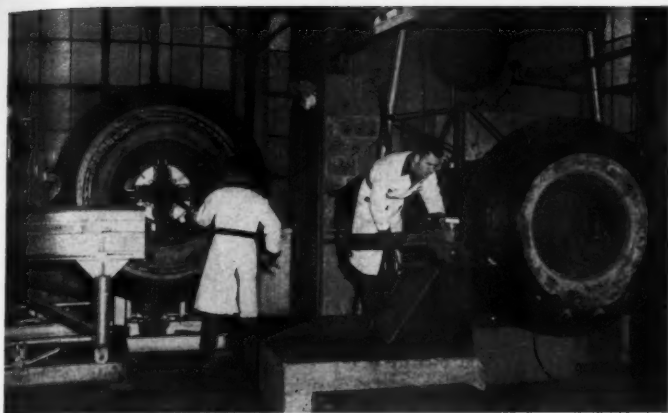
Shows typical installations of ROCKFORD CLUTCHES and POWER TAKE-OFFS. Contains diagrams of unique applications. Furnishes capacity tables, dimensions and complete specifications.

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Factory-trained specialists of the Carolina Tire Co. can recap or repair worn earth-mover tires at substantial savings to the contractor.

### Recapping Service for Earthmover Tires

Specializing in earthmover-tire recapping, the Carolina Tire Co., 232 N. Main, Salisbury, N. C., offers the contractor a service that will put his worn expensive tires back into service. The concern will recap grader and other earthmover tires in sizes from 1,100 x 24 to 2,700 x 33 with Goodyear Sure Grip, Hard Rock Lug, or Hard Rock Rib designs. It will put a Goodyear Road Lug full cap on highway and off-the-road truck tires in sizes from 825 x 20 thru 1,100 x 20.

The service is available to contractors through qualified dealers located

throughout the south. Two Carolina Tire plants in Salisbury and Spruce Pine, N. C., operate on a 24-hour basis to provide fast service. It is emphasized that the best grades of materials are used, and the recapping is done with the latest type of Lodi equipment by factory-trained operators. Recaps and repairs are warranted by the company to be free from defects in workmanship and material.

For detailed price list write to the company, or use the Request Card that is bound in at page 18. Circle No. 467.

### For Dependable Protection on CONSTRUCTION INDUSTRY'S Hydraulic Equipment



SUMP TYPE  
(Cutaway)

## MARVEL SYNCLINAL FILTERS

**Hydraulic Oils MUST BE CLEAN TO PROTECT EQUIPMENT AND REDUCE MAINTENANCE**

CONSTRUCTION ENGINEERS and MAINTENANCE MEN, whose job it is to keep construction equipment operating at peak efficiency, are specifying Marvel Synclinal Filters to be installed on all new equipment and standardizing with Marvel Synclinal Filters on existing equipment.

**It's The ACTIVE Filtering Area That Counts!**

The Synclinal design of Marvel Filters provides that all-important balance between maximum ACTIVE filtering area and sufficient storage capacity for filtered out particles. Thus, longer periods of efficient operation are attained before filter cleaning is necessary. Marvel Synclinal Filters are easy to clean because both sump and line types may be disassembled, thoroughly cleaned and reassembled, on the spot, by any workman in a matter of minutes. Line type operates in any position and may be serviced without disturbing pipe connections.

**OVER 500 ORIGINAL EQUIPMENT MANUFACTURERS Now Install Marvel Synclinal Filters as STANDARD EQUIPMENT!**

#### A SIZE FOR EVERY NEED

Available for sump or line installation in capacities from 5 to 100 G.P.M. Greater capacities may be attained by multiple installation (as described in catalog). Choice of monel mesh sizes range from coarse 30 to fine 200.

#### WATER FILTERS

Both sump and line type filters have been adapted for use in all water filtering applications. No changes have been made in the basic, balanced synclinal design.

**MARVEL ENGINEERING CO.**

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Chicago 6, Ill.  
Phone: Franklin 2-4431



LINE TYPE  
(Cutaway)

#### FILTERS FOR NON-FLAMMABLE HYDRAULIC FLUIDS

Marvel's most recent development is a filter for the efficient filtration of all types of non-flammable hydraulic fluids.

#### IMMEDIATE DELIVERY!

As in the past, Marvel continues to offer IMMEDIATE DELIVERY.

Without obligation, please send me complete data \_\_\_\_\_ CE-3  
on Marvel Synclinal Filters as indicated:  
Catalog No. 106 for Hydraulic Oils, Coolants, Lubricants  
Catalog No. 300 for Water  
Data on filters for non-flammable hydraulic fluids

Name \_\_\_\_\_ Title \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_



"I guess my grades weren't very good. They gave me this with my engineering degree."



## FIBRE FORMS

for round columns of concrete



Snellenburgs Suburban Dept. Store, Willow Grove, Pa.  
Thalheimer & Weitz, Architects, S. Yellin & Son, Inc.  
Builders, both of Philadelphia, Pa.

### Columns like this speed up the work!

...low cost SONOTUBES make it possible.

For this department store in suburban Philadelphia, SONOTUBES were used to form all of the circular columns in the building. Quick to erect, because they require minimum bracing, SONOTUBE Fibre Forms are also simple to strip when recommended methods are followed. The resulting concrete column is easy to finish because its smooth surface is unmarred.

Lightweight, low cost SONOTUBES are proven to be a fast, economical method of forming round columns of concrete. Widely used and approved by contractors, engineers and architects everywhere.

SONOTUBES are supplied in specified lengths up to 50' or can be sawed to your requirements on the job. Sizes 1" to 36" I.D.

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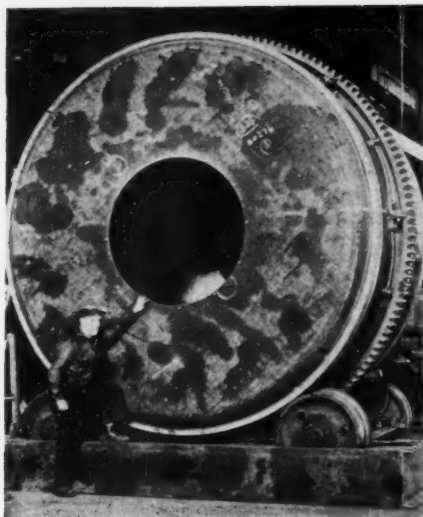


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For complete technical data and prices—write

### SONOCO PRODUCTS COMPANY

Construction Products Division  
LOS ANGELES, CAL. HARTSVILLE, S. C. — MAIN PLANT MONTCLAIR, N. J.  
AKRON, IND. BRANTFORD, ONT.



THE Worthington Corp. is building the world's largest standard concrete mixer for Miron Freres Ltd., Montreal, Canada. The large central mixer, which is to be installed in a new premixing concrete plant, will have a capacity of 9 cubic yards plus 10 per cent overload. Thirty-six 9-yard truck-mounted agitator units, to be furnished by Worthington, will transport the concrete mixed by the big central mixer. The 252-S Worthington mixer is expected to be ready the first of May. For further information write to the Worthington Corp., Harrison, N. J., or use the Request Card at page 18. Circle No. 516.



The Watson rear power take-off taps the power of a light truck to drive a post-hole digger.

### New Rear Power Takeoff And Post-Hole Digger Offered for Light Trucks

■ Compact rear power-source equipment adaptable to most light and medium-duty trucks is available in kit form from H. S. Watson Co., 1316 67th St., Emeryville, Calif. The new rear power source terminates in a standard spline for driving a wide variety of equipment which would ordinarily require operation by tractor power takeoff.

Available for use with the rear power source is a new lightweight post-hole digger. This unit, designed for one-man digging, is controlled by a built-in hand clutch and has a slip clutch for extra operating safety.

A feature of the Watson digger is its ability to be angle-operated within a 4 x 8-foot area with the truck in one position. Holes up to 40 inches in depth and 10 inches in diameter can be bored either vertically or at a sharp angle in a short time.

For further information write to the company, or use the Request Card at page 18. Circle No. 472.



## THIS QUARRY HAS STANDARDIZED ON "U. S." BELTING FOR 26 YEARS



This U. S. Matchless Elevator Belt has already delivered over 3 million tons of crushed rock.

Year after year, for 26 years, the owners of this rock quarry in Ohio have stuck to U. S. Rubber Conveyor Belting. Before 1928, the owners had tried other belts, only to find that they couldn't stand the gaff. The "U. S." belts kept output up and maintenance costs down. Furthermore, the quarry owners found that the quality and long life of "U. S." conveyor belting was also present in other "U. S." products—U. S. Matchless Elevator Belting, Rainbow® V-belts, and air hose.



U. S. Rainbow V-Belts on 250 HP motor driving the primary crusher. This is very rough service, yet the belts show no sign of wear after 5 years' work.

Such reports are commonplace from aggregate plants that use "U. S." products. In addition to the quality of the product itself, there is the "U. S." 3-way engineering service, in which "U. S." engineers work hand in hand with the plant engineers and the designers of conveyor equipment to turn out a well organized, efficient system.

Give your materials handling problem, large or small, simple or complex, to any of the 27 "U. S." District Sales Offices or write address below.



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### B-L-H Acquires Madsen

The Baldwin-Lima-Hamilton Corp., Lima, Ohio, has purchased Madsen Iron Works, Inc., La Mirada, Calif. Madsen, now a wholly owned B-L-H subsidiary, manufactures asphalt mixing plants, dryers, float finishers, and other heavy road-construction machinery.

Henry Barnhart, general manager of the B-L-H construction machinery division will succeed Martin Madsen as president of the newly acquired firm. Martin Madsen will retire. Walter Madsen will serve as vice president and William F. Boyle as secretary-treasurer. Both Mr. Barnhart and Mr. Boyle will serve on the new Madsen board of directors.

The acquisition of Madsen is the latest major B-L-H transaction in three months. In January, the company acquired Hydropress, Inc., and Loewy Construction Co., Inc., manufacturers of heavy hydraulic presses.

**MOBILE OFFICES**

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CONTRACTORS AND ENGINEERS





### Tape Rule for Builders Has Marking Features

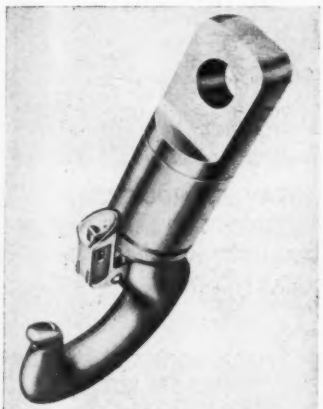
■ A heavy-duty tape rule with a 3/4-inch-wide line has been announced by The Lufkin Rule Co., Saginaw, Mich. The Super Mezurall tape is available with either the Lufkin white clad blade or the durable chrome clad blade. It has a magnesium-alloy case that is light and durable.

Marked in both feet and inches and in consecutive inches to 16ths, the rule has the first 12 inches graduated to 32nds. Another feature is a heavy black diamond every 16 inches to indicate location of studding on 16-inch centers. The rule is available in 10 and 12-foot lengths.

For further information write to the company, or use the Request Card at page 18. Circle No. 466.

### Improved Safety Latch For Line of Swivel Hooks

■ A new positive safety latch for Miller swivel hooks is made of sturdy bronze with a stainless-steel bolt and is said to prevent snagging. Designed for open or closed use, the new latch



provides a large throat opening that is convenient to use.

The latch operates on a bolt-action spring principle in locking and opening. It may be locked in position or released by depressing a pin.

Miller angular-contact ball-bearing swivels are available in 16 types and 11 sizes. Capacities range from 750 pounds to 150 tons.

For further information write to General Machine & Welding Works, 1100 E. Second St., Pomona, Calif., or use the Request Card at page 18. Circle No. 457.



**2 H.P. UNIVERSAL ELECTRIC MOTOR VIBRATOR**



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### Small Tractor Equipped With Backhoe Attachment

A new hydraulically-operated backhoe attachment for the Agricat tractor has been announced by Earl H. Pence & Co., Inc., 2150 Washington Ave., San Leandro, Calif. The Agricat is a small utility crawler tractor measuring 58 inches long, 38 inches wide, and 41 inches high. The new Agrihoe attachment converts this unit into a ditch digger that can trench in close quarters.

The Agrihoe has a 10-foot reach, can dig 6 feet deep, and loads to an 8-foot height. Interchangeable buckets, 9 and 12 inches wide, are available.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 464.

The small Agricat tractor can now dig a hole 6 feet deep with its new hydraulically-operated backhoe attachment.



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### GALION GRADER ATTACHMENTS



#### BULLDOZER

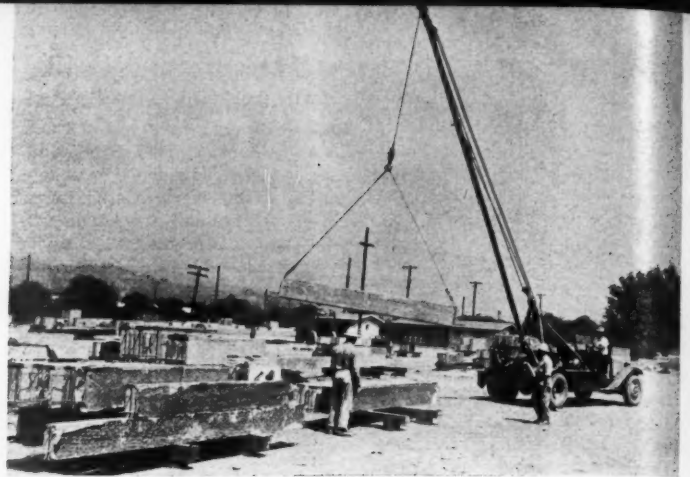
It has a true bulldozing action. Hydraulic operation is independent of other grader controls. A wide range of adjustment is provided. Effective on jobs such as backfilling, leveling, spreading, snow removal, etc.

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Costs are cut on housing project with

## Prefabricated grade beams supported on drilled concrete footings



Prefabricated beams are stacked in the casting yard by a Sterling truck-mounted hoist powered by a Tulsa winch. Stacks, tied into 22 to 26-beam packages, contain enough beams for one foundation.

Ray Day Photos

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A method combining drilled-in-place piers with prefabricated members is permitting a small crew to complete six building foundations daily for a low-cost housing development near La Habra, Calif. This speed is equaled in importance by the good foundations the method seems to provide for structures being built on expanding soils.

This type of soil condition has long plagued engineers and construction men. Companies stake their reputations on sound construction, and if the soil beneath these buildings ex-

pands or shrinks, damage to the structures and loss to the companies is likely to be severe.

Designed by the Los Angeles engineering firm of Donald R. Warren & Co., the technique is being used on the 171-unit development by D. L. Godbey, Norwalk, Calif., subcontractor on the foundation work. Phoenix Construction Co., Los Angeles, is the general contractor on the job.

Essentially, the method consists of floating a structure on adobe fill with an average of 33 drilled concrete caissons. Concrete is used to tie the

caissons monolithically to the prefabricated foundation sections. These beams are 5 1/2 inches thick so that they can accommodate foundation-grade redwood sills as part of the beam. The beams for the house foundations are 16 inches high, and the beams for the garage foundations are 12 inches high. They are simply set up on edge and tied together to form the house foundation.

Each structure has an average of 1,100 square feet of habitable area and requires an average of 235 linear feet of foundation beams. Three basic

## Announcing the NEW MODEL T-2 48" Diameter

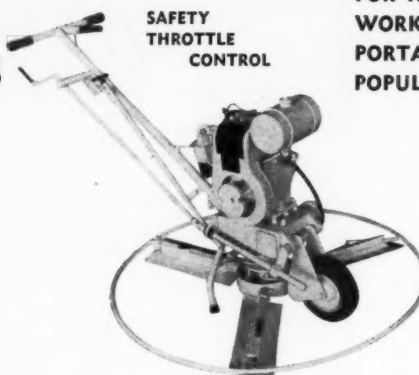
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WORK WITH THE SAME EASE OF  
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BLADES ROTATE

6 HP WISCONSIN ENGINE  
WITH AUTOMATIC  
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RETRACTABLE WHEEL  
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EXTRA RUGGED RING FOR  
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**White** MANUFACTURING  
COMPANY ELKHART 9, INDIANA

## Check the Red Request Card!

For further information on the new equipment, new materials, and new literature described in this issue of *Contractors and Engineers*, check the item number on the Red Request Card bound in at page 18. No obligation, of course, and we will forward your request directly to the manufacturer.

**Contractors and Engineers**  
470 Fourth Avenue, New York 16, N. Y.





Holes for the cast-in-place footings are drilled to required depth by a Highway Trailer auger, on an International truck and driven by a Continental engine. An average of 33 drilled concrete caissons are needed for each housing unit.



Beams taken from a package, left, are set in place by a hoisting boom powered by Highway Trailer Co. and Gar Wood winches. After beams are squared, spaces between them will be filled with steel and tie pours made.

floor plans, three different elevations, and attached or unattached garages give the development a variety in construction. Inspection of construction—which includes the new foundations—is being done under the supervision of Veterans' Administration inspectors, the Los Angeles County Building and Safety Department, and Donald R. Warren & Co., which has deputy authority.

#### Prefab Yard Setup

The prefabricating setup was close to the site, on some acreage which

was temporarily idle. In the yard, arranged to produce about eight complete houses per day, everything from forming to final transportation of the finished bundles was done.

Steel key templates were used to outline the ends of each beam. Racks of beams were arranged so that a large area of casting was possible. The 2x6 mudsill which normally forms the base for floor joists in a building was used for the side form of the prefabricated beam. It was attached by means of countersunk bolts, and became a monolithic part of the pre-

fabricated beam.

Concrete for each deck of prefabricated beams was poured by Challenge truck mixers, which hauled between the job and La Habra Readymix Concrete Co. Each beam contains two pieces of 3/4-inch round steel, which protrude through both ends of each member. Another piece of 3/4-inch round steel, 7-feet long, and a small piece of dowel steel were placed in the forms just prior to the concrete pour. A hand-pulled surface screed, on which a Master electric vibrator was mounted, consolidated the concrete.

After concrete for a deck of beams had been placed, Sisalkraft building paper was used to form a break between the decks. Succeeding beams were placed in a similar manner as soon as the lower decks were able to support the weight. A combination water cure and Sisalkraft paper protection was then set up for 7 days to allow the prefabricated beams to develop approximately 2,000 psi strength before they were handled by hoisting equipment.

Aside from scheduling concrete placing operations, managing labor



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only one man  
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Save profits for yourself. Instead of hiring four or five men to set up hoisting operations, use only one . . . and the BUCK Hoisting Machine.

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ELECTRIC MANUFACTURING COMPANY Inc. • Appleton, Wisconsin



One of the 15-ton packages of precast concrete beams is lifted in the casting yard by a Hyster straddle truck for transportation to the site nearby. Each building in the development requires an average of 235 linear feet of foundation beams.

Ray Day Photo

(Continued from preceding page)

crews on the mass production job, and getting forms set up promptly, the contractor's biggest problem in the prefabricating yard was keeping beams straight and true. For the combination form and mudsill, foundation-grade redwood was used. These members were stiffened by nailing 1x4's temporarily across the top.

One of the last jobs in the prefabricating yard was sorting, classifying, and stacking prefabricated beams into packaged units. These packages, weighing approximately 15 tons, were stacked by a Sterling truck-mounted hoist which was powered by a Tulsa winch. After being marked with a lot number and inspected for cracks or other damage, the packaged units were hauled to the site with ease by

a Hyster 20-ton-capacity straddle truck.

#### Six Houses Per Day

By the time 95 of the 171 housing units had been finished, Godbey was completing six houses daily. The foundation drilling had been subbed to the A. S. Schulman Electric Co., Los Angeles, an electric specialty firm which concentrates on drilling telephone and electric-pole holes. Each house called for 33 holes, 12 inches in diameter and from 4 to 8 feet deep.

Schulman brought in an International truck carrying a Continental-driven Highway auger which the firm has used on other drilling jobs. Hole locations were checked by survey men, who spotted the center of each hole position with a small nail and a tag indicating the exact depth to which the hole should be drilled.

Following the auger crew were other crews which made fast work of each unit. A two-man carpenter crew was able to complete six house foundations per day. They established string lines at each house location and drove special 10-inch steel nails for grades.

The use of these nails on the grading was a result of an effort to save time and material. Plans called for concrete haunches poured to exact location above the filled-in drilled piles. For a short time this haunch was excavated by conventional trench-digging equipment, but this proved to be much too slow. Job superintendent Paul Shields, acting on the idea that excavation could be done to much closer tolerance by hand, set up a two-man labor gang for the job. By excavating to closer tolerance, the contractor wasted less concrete in placing the haunches. A direct-reading hammer device permitted carpenters to tap the 10-inch steel spikes to grade without bending over to take a measure with a rule. The gadget, rigged on the job by Shields, could be read directly by the man on the transit.

After concrete for the drilled piles and haunches was placed by truck mixers from La Habra Readymix Concrete Co., steel dowel bars were placed in the fresh concrete. Units were then ready for the setting of prefabricated foundation beams which had been delivered in packages to each job site.

These prefabricated beams were set rapidly by a truck-mounted hoisting boom powered by Highway Trailer Co. and Gar Wood power winches. Immediately afterward, a two-man carpenter crew squared the beams precisely on string lines and outlined the house foundation. The filler spaces between these beams then were filled with the necessary steel

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Your operator can maintain a fast-paced cycle—digging, hoisting, swinging and dumping with quick sureness that effectively boosts output.

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CONTRACTORS AND ENGINEERS



and the tie pours were made to complete each foundation.

The success of the La Habra job will probably be followed by other applications of the method. Besides promising to speed conventional housing construction—particularly on large tracts—and to compete favorably with contemporary methods of small building foundation construction, the design makes the foundations termite-proof. Most important of all, it may permit houses to be built on expanding-type soils without the usual danger of plaster cracking and other damage.

THE END

### Announce New Line of Portable Electric Plants

■ Two new series of portable electric generating plants are being announced by D. W. Onan & Sons Inc., University Ave. S. E., Minneapolis 14, Minn. Available in sizes ranging from



500 to 2,500 watts, the new models have been designed especially for contractors needing increased power to operate the many new portable electric tools now on the market.

The new heavy-duty four-cycle Onan-built engine used as prime mover for the new models is a single-cylinder air-cooled unit. It is manually started by means of a pull rope or by an optional recoil-type starter.

An Onan-built revolving armature generator is direct-connected to the engine for permanent alignment. A two-wheel dolly is available for easier portability.

For further information write to the company or use the Request Card that is bound in at page 18. Circle No. 434.

### Hercules Appoints Mace

Cliff A. Mace, newly appointed division manager of explosives sales for the explosives department of Hercules Powder Co., Wilmington, Del., has taken up duties formerly handled by H. Merrill Lynch, who has retired. Succeeding Mr. Mace as assistant division manager is Julian O. Schofield.

Mr. Mace, with Hercules since 1933, has held a number of posts in both the home and the San Francisco offices.

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"You See When Tank Is Full"

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CUNNINGHAM KANSAS

### Highway, Bridge Engineers Being Accepted by BPR

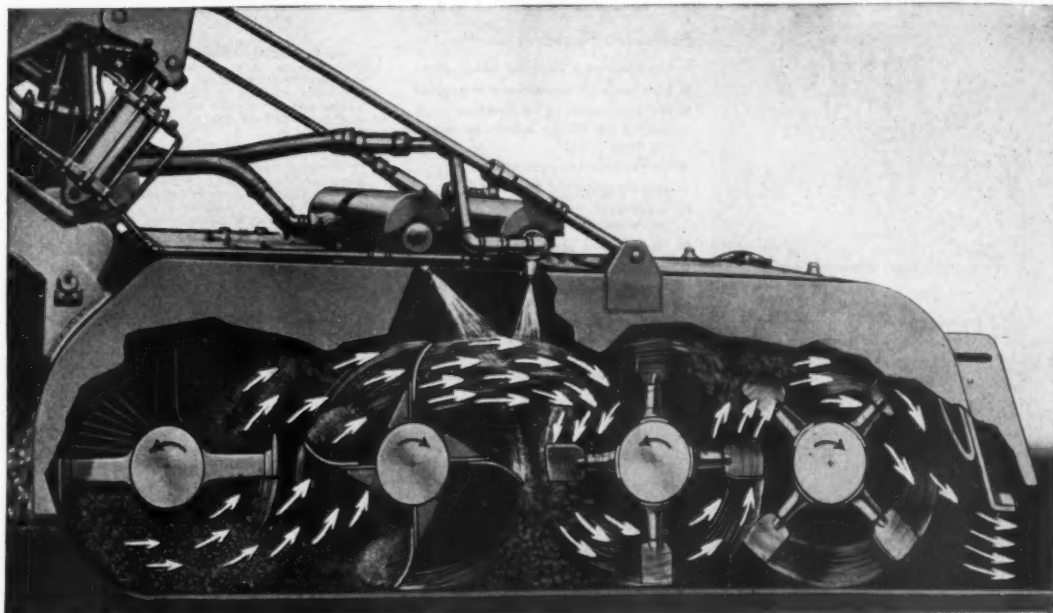
Applications for positions as highway engineers and highway bridge engineers are being accepted until further notice by the Bureau of Public Roads. The posts are located throughout the United States, and salaries are \$4,205 to \$5,940 a year.

To qualify, applicants must have the appropriate education or experience. No written test is required.

Further information and application forms may be obtained at post offices throughout the country or from the U. S. Civil Service Commission, Washington 25, D. C. Applications must be filed with the Executive Secretary, Board of U. S. Civil Service Examiners, Bureau of Public Roads, Department of Commerce, Washington 25, D. C.



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## How P&H makes Soil Stabilization an exact science

Getting uniform high quality is a matter of fact with the P&H Soil Stabilizer — *not* guesswork. Exact results can be *predetermined* every time.

Here, in the P&H mixing box, *all* stabilizing functions are performed, not just some of them. Follow its full processing action. Note how atomized liquid is applied while materials are *in transit* between the blending drum and pugmill. This more efficient dispersion assures accurate, uniform coating of materials . . . ready for the twin pugmill to whip into a homogeneous mass for final spreading and immediate compaction.

### Compare specifications!

Insist upon having all specifications before you decide on the stabilization method. Know exactly what you can get in quality, uniform strength, speed and low cost and the many other advantages of the P&H method of processing. Then you will be convinced that the P&H Soil Stabilizer is your wisest choice. No other gives you so much production with so little allied equipment and skilled help. *And all this in just one pass!*

P&H SOIL STABILIZER DIVISION

**HARNISCHFEGER CORPORATION**

Milwaukee 46, Wisconsin

the **P&H** Line



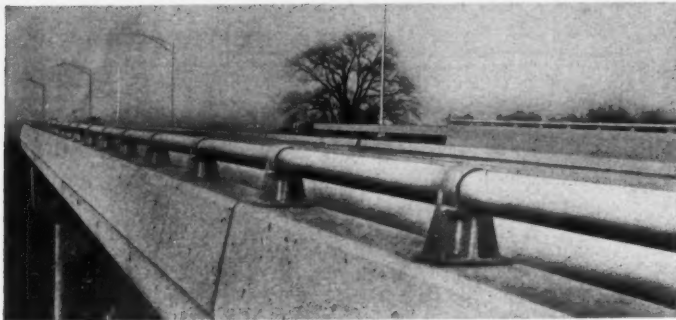
P&H Model EA-56 is easily transported from job to job and processes a 5-ft. width.



Larger P&H Soil Stabilizers for processing 8- and 10-ft. widths for all road and base course requirements.



Ask for the complete story on this modern, lower cost and better method for building all-weather surfaces and base courses for roads, streets, airports, parking areas, etc., of soil-cement, soil-bituminous, or clay-gravel.



### Aluminum Highway Railing Lowers Maintenance Costs

■ The nation's largest installation of corrosion-resistant aluminum highway railing—enough to run for almost 40 miles—is being installed on

the new Ohio Turnpike. The light-weight railing will line approximately 200,000 feet of bridge structures, overpasses, and underpasses

Aluminum highway railing being installed on bridges, overpasses, and underpasses on the Ohio Turnpike will require little maintenance and no painting.

along the new superhighway.

The railing, supplied by Aluminum Co. of America, is of the single-rail parapet type. The posts are aluminum permanent-mold castings made at Alcoa's Cleveland, Ohio, works.

The aluminum railing does not require painting. An added advantage is that it will not cause rust streaks on metal and masonry surfaces.

For further information on the use of aluminum highway railings write to Aluminum Co. of America, 1501 Alcoa Bldg., Pittsburgh 19, Pa., or use the Request Card at page 18. Circle No. 469.



The new Hobart arc welder.

### New DC Arc Welder Is Selenium-Rectifier Type

■ A new 300-amp dc selenium-rectifier-type arc welder with remote control is announced by Hobart Brothers Co., Hobart Square, Troy, Ohio.

The five-range control switch of this welder gives coarse adjustment with generous overlap between ranges to provide dual control. The rheostat, which can be removed for remote control, provides continuous control by adjusting the direct current through coils. The welding current range is 35 to 425 amps.

For further information write to the company, or use the Request Card at page 18. Circle No. 465.

## WELCO ROAD MACHINERY VERTICAL-PAK Combination Contour and Rigid

### Exclusive Features:—

- Uniform and contour compaction
- Low or high shoulder compaction
- No earthquaking of surfaces such as caused by tilting action on oscillating type rollers
- Lower maintenance costs
- Spindles doubly supported
- Individual wheel mountings for quick repair
- Tire hazard reduced five times
- Excessive weight never thrown on any one tire

The VERTICAL ACTION on the VERTICAL-PAK machine is constructed on a cantilever arrangement transferring a ratio of excessive load from one tire to the adjacent tires. This applies uniform weight on each tire regardless of the contour of the surface. This is not a spring action.

### Optional Equipment

Water tank and sprinkler system are optional features. The sprinkler system consists of a controlled drip over each tire. We recommend a solution—"WELCO-D"—for use in the water to prevent material being rolled from sticking to the tire. Use it in a 1/2 to 1% solution (no greater than 1%).

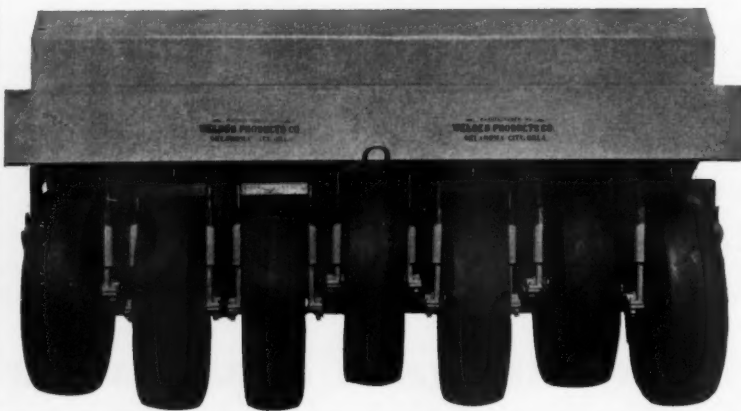
This machine solves the big problem of pneumatic packers. For further details, write:

## Welded Products Company

### Manufacturers of —

- WELCO tow-type pneumatic rollers
- WELCO Crusher-Pak grid rollers
- WELCO sheepfoot rollers
- WELCO powered smooth rollers 3-5 ton
- WELCO powered sweepers
- WELCO self-propelled pneumatic rollers

528 N. Kentucky  
OKLAHOMA CITY  
OKLAHOMA  
Phone: FOrest 5-3044



## MC DUAL PRIMERS

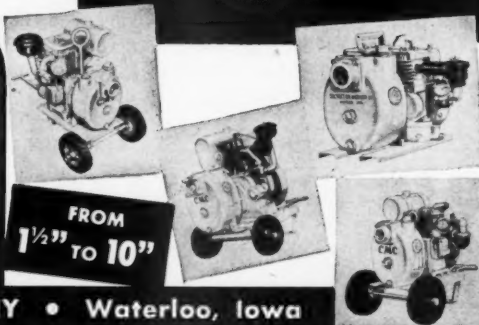
Faster Dual Priming . . . More Dependable Operation  
Longer Life . . . Less Maintenance

## KING SIZE Pump Values

THAT SPELL LOWER COST WATER HANDLING  
ON ANY CONSTRUCTION JOB!

### LOOK AT THESE MONEY-SAVING FEATURES

- Dual Volutes
- Self Cleaning Case
- Lighter Weight
- Long Life Seal
- Half the Parts
- Unitized Construction

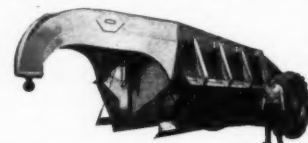


FROM  
1 1/2" TO 10"

CONSTRUCTION MACHINERY COMPANY • Waterloo, Iowa

### Bottom-Dump Dirt Wagon Hauls 15-Yard Load

■ A new 15-cubic-yard dirt wagon is announced by the Webb Corp., Webb City, Mo. With a low center of gravity and a new ball-type hitch, the wagon travels behind the tractor or tractor-trailer over any kind of

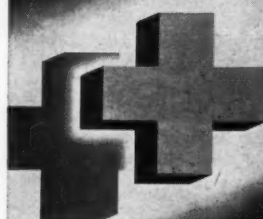


ground with less strain on both the tractor and the wagon.

The bottom-dump doors are operated by cables and actuated by a hydraulic cylinder controlled by a valve in the cab of the tractor. Accurately controlled by the operator, the doors may be opened to any position so that material can be windrowed. They may be opened or closed at any time, whether the wagon is moving or standing still.

For further information write to the company, or use the Request Card at page 18. Circle No. 479.

answer the call



join and serve

CONTRACTORS AND ENGINEERS



## Tractor Fork-Lift For Off-Pavement Use

■ A fork-lift attachment for Ford tractors has been announced by Sherman Products, Inc., Royal Oak, Mich. The new fork-lift, which is designed to operate on off-pavement surfaces, was originated by the K-D Mfg. Co., of Cleburne, Texas, and has been developed further by Sherman Products, Inc. Unlike the standard industrial fork-lift truck with its low clearance, narrow tire-treads, and small wheels, the off-pavement Sherman fork-lift can be used wherever a tractor will operate.

The hydraulic attachment will lift 4,000 pounds 10 feet into the air. Power steering is a standard feature.

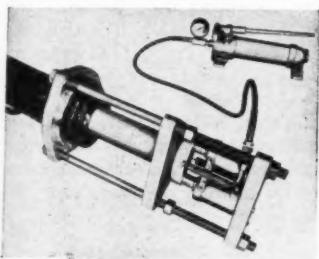
Available for the basic mechanism are 27, 30, 36, 42, and 48-inch lift-forks; a crane; angledozer; scoop bucket; concrete bucket; and concrete-block forks.

The Sherman fork-lift is sold and serviced by Ford tractor dealers.

For further information write to the company, or use the Request Card at page 18. Circle No. 412.

## New Hydraulic Tool Set For Tractor Maintenance

■ Utilizing the portable 50-ton Power-Twin center-hole hydraulic ram for power, the Owatonna Tool Co. has built a special tool set for removing and installing the track and accumulator springs on the Interna-



Another in the series of Owatonna hydraulically-powered tools for making maintenance jobs easier is this new tool set for removing and installing the track and accumulator springs on International TD-24 tractors.

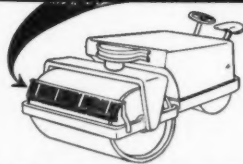
tional TD-24 tractor. The advantage of this tool may be seen in the fact that approximately 35 tons of power is required to compress the track spring.

Contractors who already have the hydraulic unit may purchase the tool set alone.

For further information write to Owatonna Tool Co., 381 N. Cedar St., Owatonna, Minn., or use the Request Card at page 18. Circle No. 498.

For Increased Efficiency in Road Roller Operation Get the NEW

## HYDRO-MAT



All sizes for all makes of road rollers.  
KOFFLER SALES CORPORATION  
3757 No. Racine Ave., Chicago 13, Ill.

The Sherman fork-lift, which can work on unpaved ground, shows off its lifting capacity.



## Booklet on Motor Graders

■ Adams motor graders Nos. 440 and 330, powered by 100 and 75-hp diesel engines respectively, are described in a new catalog. The construction of these graders, their operating advantages, and their application to a wide variety of work are covered.

The various blade positions are pictured along with detailed views of the Adams constant-mesh transmission, the full-floating rear axle, and the engines. Optional equipment shown includes scarifier, bulldozer, V-type snowplows and wings, and rotary snowplows and snow wings.

To obtain this literature write to Adams Division, LeTourneau-Westinghouse Co., P. O. Box 853, Indianapolis, Ind., or use the Request Card that is bound in at page 18. Circle No. 526.

## Model 3A-48 Mounted on OLIVER "OC-3" Crawler Tractor



## 7 DIFFICULT TRENCHING OPERATIONS

Made easy with...

## THE UNIVERSAL TRENCHER

Especially designed for all around "UTILITY TRENCHING"... Home Footings, General Service Lines, Irrigation Ditches, etc. Trenches to 48" depth and 14", 16", 18" Width... All hydraulic controls with side-seat arrangement reducing "Operator Fatigue"

SEE YOUR NEAREST "OLIVER" DEALER  
FOR FULL PARTICULARS

Send for our FREE FOLDER for your file... It outlines outstanding FEATURES and SPECIFICATIONS of the UNIVERSAL TRENCHER

HELLER Eng. & Mfg. Co.

1849-G East Slauson Ave.,  
Los Angeles 58, Calif.



SWITCHES DIRT,  
INSTANTLY,  
TO EITHER SIDE

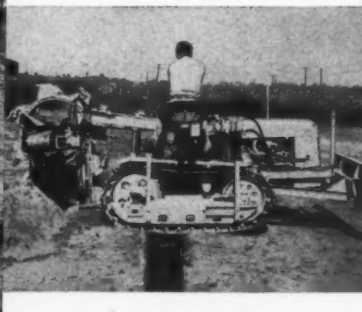
STREET ASPHALT IS  
NO PROBLEM

HOLDS LINE  
AND GRADE  
WITHOUT EFFORT

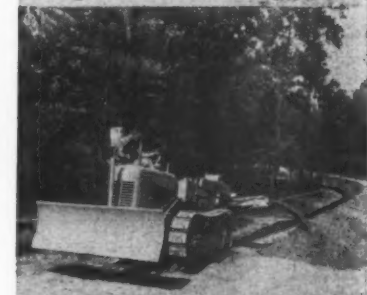
TRENCHES EASILY  
IN SMALL SPACE  
... NEAR BUILDINGS, etc.



SQUARE TRENCHES



CROSS TRENCHES



PIPE LINE STRIPPING

36TH ANNUAL MEETING  
ASSOCIATED EQUIPMENT DISTRIBUTORS  
The Conrad Hilton — Chicago — January 23-27, 1955  
PHOTOGRAPH BY CONTRACTORS & ENGINEERS MAGAZINE  
DONALD V. BUTTENHEIM, PUBLISHER

## Equipment distributors support high

Indorsing President Eisenhower's \$101 billion highway program, more than 3,000 of the men who sell the nation's construction equipment adopted a resolution urging "vigorous prosecution" of the 10-year road plan "by whatever means and financial methods the Congress may decide upon." The resolution, which was forwarded to the President, commends his "forthright and realistic approach toward this critical problem." It was adopted at the third business session of the 36th annual convention of the Associated Equipment Distributors, held January 23 to 27 at the Conrad Hilton Hotel in Chicago.

The resolution expresses confidence that the construction industry "possesses an unexcelled flexibility for meeting any conditions, and that skilled contractor organizations, material producers, and construction equipment manufacturers and their distributors are in a position to readily carry out their part of this program with efficiency and dispatch."

Speaking at one of the luncheon sessions of the convention, the newly elected president of the association, Ray J. Finn, president of Bode-Finn Co., Cincinnati, Ohio, reaffirmed this statement. He said: "The successful completion of President Eisenhower's 10-year program will call for close cooperation between federal, state, and local governments, and between contractors, equipment distributors, and manufacturers. We of the distribution industry are ready and waiting to do our part."

### The Construction Team

The ever-increasing necessity for better understanding and cooperation among manufacturers, distributors, and contractors was re-emphasized in several ways during the sessions of the convention.

In addressing the opening business session, John MacLeod, president of Macco Corp., Paramount, Calif., and outgoing president of the Associated General Contractors of America, struck the keynote when he said, "Equipment distributors, manufacturers, and contractors are all members of a team and have a common objective—the construction of better projects more rapidly and more efficiently." After first drawing attention to the new record for the volume of new construction put in place, MacLeod predicted that another record would be set in 1955 and that the construction industry would be handling annual volumes of new construction amounting to 60 to 75 billions of dollars within the next few years.

MacLeod continued by pointing out that the growth of construction to the point where it now provides employment for one of every six persons gainfully employed brings with it the need for increased responsibility throughout the industry. To assist the contractor to bid successfully and make a profit under present highly competitive conditions, MacLeod de-

CONTRACTORS AND ENGINEERS



## ppor highway program

clared, manufacturers must continue to make better and more efficient equipment and distributors must provide the services the contractor needs.

Specifically, MacLeod suggested, distributors should know the capacity and limitations of each piece of equipment and get this information to the contractor. Then, when a new piece of equipment is sold, the distributor should instruct the contractor's personnel in the safe handling and proper maintenance of the machine. Once the equipment is in operation, the distributor can provide further service by maintaining adequate parts stocks and maintenance service facilities.

The speaker drew a round of applause when he requested that distributors stand behind contractor organizations in advocating construction by contract instead of the day-labor method. In this regard he asked that contractors be given the same considerations in the purchase of equipment as are extended to governmental agencies. MacLeod concluded by saying that the team of contractor, equipment manufacturer, and distributor must help sell needed construction projects to the public. "Means of financing must be found," he said, "and after that, the public needs the assurance that its funds will be safe-guarded and that projects to fit their needs will be built at the lowest possible cost."

### Manufacturer-Distributor Relations

The problem of the relationship between the manufacturers and distributors of construction equipment was one of the principal subjects of both formal and informal sessions of the convention. Following the usual custom, individual distributors and manufacturers worked out their problems during private conferences held in the afternoon and evening hours when no group sessions were scheduled. In addition, the subject was approached from several angles in the regular convention sessions.

Outgoing AED president George W. Gagel, Machinery & Supplies Co., Kansas City, Mo., threw this subject wide open in his opening address when he said, "Such practices as excessive free service, both to the customer and for the factory, slipshod management of sales force and territories, total disregard of sound economic planning on the matter of trade-ins, and utter lack of sound thinking on financing long-term selling simply must be re-appraised." These and other subjects were entertainingly presented in a later session in a series of blackout skits and panel discussions.

The need for further understanding and cooperation between the two groups came to light again in two group discussion meetings on the subjects of direct-mail advertising and advertising in regional trade publications. Both groups recognized the value of both types of advertising, but expressed divergent views on the content of such advertising and the dis-

tribution of the cost.

### Sales Planning

The economics of the industry was discussed both from the standpoint of the cost of doing business and from the angle of sales planning. A panel consisting of a distributor, an accountant, and a banker discussed the significant points brought to light in the AED's "Cost-of-Doing-Business Survey". According to this panel, distributors will need approximately

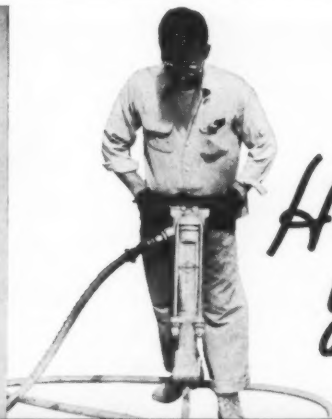
(Continued on next page)



AED president, Ray J. Finn (front row, center) Bode-Finn Co., Cincinnati, Ohio, is flanked by vice president L. Miner Doolen, left, Telford Equipment Co., Lansing, Mich., and executive vice president S. F. Laskey, right, Northwestern Equipment, Inc., Fargo, N. Dak. Back row, left to right, are AED treasurer F. J. Fitzpatrick, Parker Danner Co., Hyde Park, Mass.; vice presidents H. D. Anderson, Rish Equipment Co., Bluefield, W. Va., and M. F. Macdonald, F. H. Hopkins Co., Ltd., Montreal, Quebec, Canada; and executive secretary P. D. Hermann.

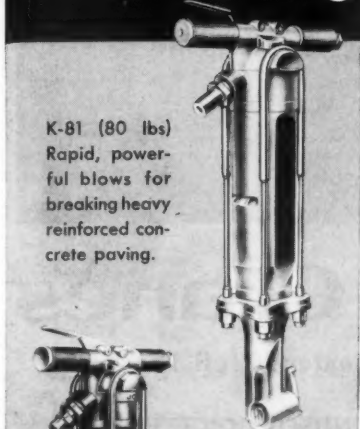


K-89 (90 lbs)  
Extra heavy  
blows for  
breaking tough,  
dense concrete  
sections.



*Here's what  
you get  
in a*

## JOY PAVING BREAKER



K-81 (80 lbs)  
Rapid, powerful  
blows for  
breaking heavy  
reinforced concrete  
paving.



K-61 (65 lbs)  
Wide range of  
application for  
medium demolition  
and heavy  
spading.



K-31 (30 lbs)  
Easily handles  
demolition of  
thin concrete  
sections and  
light masonry.

**LONG WEAR** Cadmium plating inside and out prevents rust and corrosion. Cadmium, which develops lubricating qualities under heat and stress, eliminates scoring and facilitates running-in. Long life is further assured by a throttle-controlled lube system. Each movement of the throttle shoots exactly the right amount of oil to all working parts.

**ECONOMICAL OPERATION** A unique mechanism . . . the Dual Valve . . . gets the maximum out of your air supply. By controlling the air on the up stroke as well as the down, the Dual Valve actually makes air do more work.

**RUGGED, SIMPLE CONSTRUCTION** U-type side rods give the balanced tension of four rods. This assures perfect alignment of parts, eliminates old-fashioned side rod springs, and stops side rod breakage. The breaker tool is held tightly by a cam-type retainer—a simple flip down to release or up to secure. It has no troublesome nuts, bolts, lock washers, springs, etc.

**OPERATOR COMFORT** The piston of a Joy Breaker never strikes the front head. A cushion of air absorbs the blow after the full force has been delivered to the breaker tool. This reduces shock, vibration and operator fatigue. The streamlined design allows the operator to lift and slide the breaker against his leg without collecting bumps and bruises from projections.

**FREE BULLETIN** Complete details on Joy Paving Breakers can be had by writing for Bulletin 87-P to Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa. In Canada: Joy Manufacturing Company (Canada) Limited, Galt, Ontario.



*Consult  
a Joy  
Engineer*

# JOY

W&D C-3487

CONSTRUCTION EQUIPMENT MANUFACTURERS  
FOR OVER HALF A CENTURY

## DISTRIBUTOR DOINGS

(Continued from preceding page)  
\$134 million to handle the anticipated sales of \$500 million in construction equipment during this year and will be able to secure a substantial portion of this money from banks. The panel pointed out the importance of early planning.

In a later session another panel representing the firm of Booz, Allen & Hamilton presented the highlights, major findings, and recommendations of an extensive study of the field of sales management as related to construction equipment distributors. Methods of planning a sales program to suit the needs of the distributor's

territory and organization were discussed, and specific recommendations were made concerning the selection and training of the sales force.

### New Officers and Directors

Ray J. Finn, president of Bode-Finn Co., Cincinnati, Ohio, was elected international president of AED to succeed George W. Gagel, Machinery & Supplies Co., Kansas City, Mo. Finn has just completed a term as executive vice-president of the organization and had served two terms as vice president. He has also been on the board of directors and has served

Newly elected president of AED, Ray J. Finn, Bode-Finn Co., Cincinnati, Ohio.

as chairman of several committees.

Other officers include executive vice president S. F. Laskey, president of Northwestern Equipment Inc., Fargo, N. Dak.; and three vice presidents: H. D. Anderson, Rish Equipment Co.,



Harry J. Hush, AED past president, Griffin Equipment Corp., New York, N. Y., with his wife Mrs. H. J. (Gertrude) Hush.

Bluefield, W. Va.; L. Miner Doolen, Telford Equipment Co., Lansing, Mich.; and M. F. Macdonald, F. H. Hopkins & Co., Ltd., Montreal, Que-

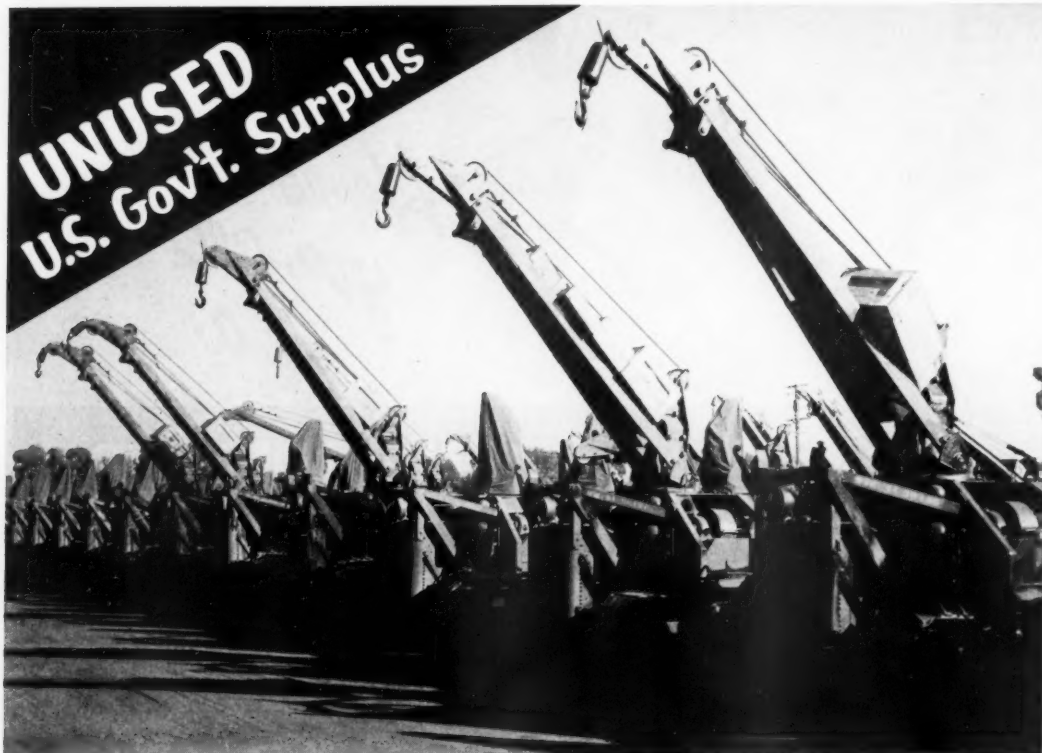


Oscar B. Bjorge, Clyde Equipment Co., Portland, Ore.

bec. Re-elected for his third term as treasurer of the association was F. J. Fitzpatrick, Parker-Danner Co., Hyde Park, Mass.



Charles T. "Chuck" Berry, Berry Equipment Co., Memphis, Tenn.



## IHC-T9 Swing Cranes

• Full 360° swing

• Boom extends full 18 feet

**SAVE  
50%**

**Cranes Ready  
For Immediate  
Delivery**

These IHC-T9 Trackson Swing Cranes were sold by the U. S. Navy as **UNUSED**. They are still in original condition, exactly as purchased, with extra crates of spare parts.

This versatile equipment is ideal for general material handling, sewer construction or repair, pipeline work . . . serves as a yard crane . . . an all-round piece of equipment for the construction crew.

We will ship anywhere in the United States, subject to inspection. Swing Cranes can be placed on docks for water shipment at no charge. Sold direct only—we pass the saving on to you.

### OTHER UNUSED GOV'T SURPLUS EQUIPMENT

- ★ A-C HD7W Tractors with Dozers
- ★ Linkbelt MS 70 Cruiser Cranes
- ★ P&H Model 150 Crawler Cranes
- ★ Also trucks, parts, and most types of construction equipment.



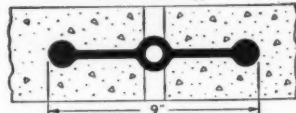
**TRUCK & MACHINERY CORP.**

P. O. Box 5085 • Tulsa, Oklahoma  
Phone 85-6018

**Phone Collect NOW!**

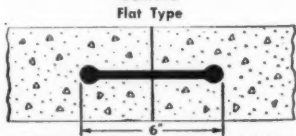
## Servicised Rubber WATERSTOP

FOR EXPANSION JOINTS  
Center Bulb Type



Servicised Rubber Waterstops meet all standard engineering specifications. Made of durable, elastic, cured rubber compound.

FOR EXPANSION AND CONSTRUCTION JOINTS  
Flat Type



Both types available in 6", 9" and 12" widths in any required length.

Write for the Servicised Products Catalog. Sent without obligation.

**SERVICISED PRODUCTS CORP.**  
6051 W. 65th ST. • CHICAGO, ILL.

**CONTRACTORS AND ENGINEERS**





Earl Maloon, Southwest Welding & Mfg. Co., Alhambra, Calif.



Earle R. Evans, Jr., The Edward G. Flaherty Co., Long Island City, N. Y.



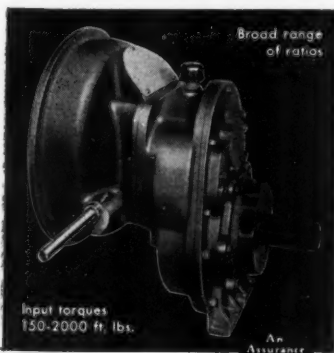
AED past president, S. John Oeschle, Metalweld, Inc., Philadelphia, Pa.

Eight directors were elected. Representing region II (New York and New Jersey) is Charles C. Wing, R. B. Wing & Son Corp., Albany, N. Y. Region IV (Delaware, Washington, D. C., Maryland, North Carolina, Virginia, and West Virginia) is represented by William C. Coleman, Bemiss Equipment Corp., Richmond, Va. Region V (Alabama, Florida, Georgia, South Carolina, and eastern Tennessee) is represented by Earl J. Blanch-



Stanley G. Marks, Marks Tractor & Equipment Co., Cleveland, Ohio.

ard, Blanchard Machinery, Inc., Miami, Fla. Representing region VI (Kentucky and Ohio) is Frank J. Lorenz, The Lorenz Equipment Co., Columbus, Ohio. Region VIII (Minnesota and North and South Dakota) is represented by John R. Borchert, Borchert-Ingersoll, Inc., St. Paul, Minn.; region X (Texas and Oklahoma) by Jewel A. Benson, Benson



## Special heavy-duty

- Transmissions
- Reduction Units
- Mechanical Drives for Torque Converters

Cotta Transmission Co., Rockford, Illinois

# COTTA

HEAVY-DUTY TRANSMISSIONS

"Engineered-to-order"

Tractor Co., Houston, Texas; region XII (Idaho, Montana, Oregon, and Washington) by Philip A. Dufford, Intermountain Equipment Co., Boise, Idaho; and Region XIV (Colorado, Utah, New Mexico, and Wyoming) by

Walter W. Kershaw, Wheeler-Kershaw Co., Salt Lake City, Utah.

By-laws of the organization were amended to provide membership in AED for the technical press and for certain financing institutions. Specifically, the revision extended Associate Membership in the association to those "engaged in selling, servicing or renting new or used construction equipment but not qualified for active membership, . . . engaged in the business of publishing a national or regional trade publication containing editorials and/or construction reports and advertising material primarily of interest to the construction equipment distributors, and . . . engaged in the business of financing service to the equipment distributors."

The next meeting of the AED will be held in Chicago the last week in January, 1956. THE END

## B-L-H Appoints Dealers

Three new dealers have been named by the Construction Equipment Division of Baldwin-Lima-Hamilton Corp., Lima, Ohio.

Covering northern and central Illinois, R. C. Larkin Co., Chicago, Ill., will handle the complete line of Baldwin-Lima-Hamilton construction machinery. Industrial Tractor & Equipment Co., Inc., Nashville, Tenn., will distribute the Lima line of power shovels, cranes, draglines, and pull shovels in central Tennessee.

From its headquarters at 3611 St. Germaine Court, Louisville, Ky., Kentucky Equipment Co. Inc., will serve the entire state with the exception of three extreme northern and three southeastern counties.

(Continued on next page)

# "Best Front End Loader This County Ever Had"

CALICHE BASE FOR A NEW ROAD in Bee County, Texas, is obtained from leased pit near Skidmore. INTERNATIONAL DROTT TD-9 Skid-Shovel loads out all the material needed for building and maintenance along county's 450 miles of roads, keeps four trucks busy hauling.



Bee County, Texas, cuts materials handling, excavating cost with INTERNATIONAL DROTT Skid-Shovel, according to County Commissioner H. F. Speikerman

Materials handling, sewer and gutter excavation, ditching and stockpiling start the long list of jobs handled by the INTERNATIONAL DROTT TD-9 Skid-Shovel owned by Bee County, Texas.

"There's just nothing that this Skid-Shovel can't do," according to County Commissioner H. F. Speikerman.

"Any type of loading work or any small excavating job is done much better, much faster and with much less expense by this unit."

"We saw all the tractor-mounted front-end loaders in operation but none of them could match the performance or the production of the INTERNATIONAL DROTT TD-9 Skid-Shovel."

Only with INTERNATIONAL DROTT Skid-Shovels do you get the benefit of Skid-Shoes which utilize the lever principle to provide 300% greater bucket break-out or digging force. Heaped loads are transported at ground level . . . and in high gear . . . on the Skid-Shoes, which take wear and carrying strain off the tractor.

The exclusive and patented Hydro-Spring absorbs 70% of the shocks normally encountered in front-end loaders, extends the life of the equipment, makes operating far easier.

INTERNATIONAL DROTT Skid-Shovels are available in four sizes. For the unit best suited to your job, call your International Industrial Power Distributor today.

INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILLINOIS  
DROTT MANUFACTURING CORP., MILWAUKEE 8, WISCONSIN

## PRY-ACTION BREAK-OUT

NOT THIS



BUT THIS

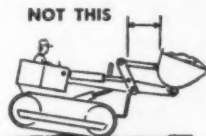


3,000 to 9,000 lbs., all on front of tractor

9,000 to 27,000 lbs., all on loader shoes on ground

## SKID-SHOE TRANSPORTATION

NOT THIS



BUT THIS



INTERNATIONAL  
DROTT

(Continued from preceding page)

## Hyster Expands Southern Dealer Service Area

The territory covered by Wrenn Bros., Hyster dealer in the southeast, has been expanded to include the entire state of Georgia. Its territory now covers Georgia, South Carolina, Chambers County in Alabama, and part of North Carolina.

Sales and service facilities for the line of mobile cranes, platform trucks, and fork-lift trucks manufactured by the Hyster Co., Portland, Oreg., will be available at Wrenn Bros. headquarters at 4701 Pineville Road, Charlotte N. C. Its branches at 130 Boulevard N. E., Atlanta, Ga., and 910 Laurens Road, Greenville, S. C., will also offer the service.

Servicing, parts, and warranties

were among the topics covered at a three-day export service conference held at the company's Peoria, Ill., factory recently. Altogether, a total of 19 Caterpillar-Hyster dealer's men from five continents attended.

## Canadian Dealer for B-E

Now serving as a Bucyrus-Erie distributor for northwestern Ontario, Canada, is W. H. Marr, Ltd., Kenora, Ontario. The company offers sales and service on the convertible excavators and cranes manufactured by the South Milwaukee, Wis., firm, as well as on Ward Leonard electric shovels, and B-E Hydrocranes, Hydrohoes, and Red Arch dragline buckets. Servicing facilities are located at the dealer's plant, 400-418 Railway St., Kenora, and at branches in Atikokan and Dryden, Ontario.

## Cleaver-Brooks Names West Coast Representative

Tamco Engineers, San Francisco, Calif., has been appointed manufacturers representative for the sale of boiler equipment by the Cleaver-Brooks Co., Milwaukee, Wis.

From its headquarters at 204 Davis St., Tamco will service the northern half of California and the western half of Nevada.

## Highway Equipment Co. Promotes Roy Gaddis, Jr.

Roy Gaddis, Jr., the new assistant general manager of Highway Equipment Co., Inc., Cedar Rapids, Iowa, now is serving in an advisory capacity while also assisting in sales. With the company for the past eight years, Mr. Gaddis has worked in the production,



The assistant general manager of Highway Equipment Co., Roy Gaddis, Jr.

parts, and experimental departments of the plant. For the last three years he has worked in the company's sales department.

## Wayne Dealers Named

Four new distributors have been appointed to handle the Wayne line of crane excavators manufactured by the Wayne Shovel & Crane Division of the American Steel Dredge Co., Inc., Fort Wayne, Ind.

Dravo-Doyle Co., Pittsburgh, Pa., is covering western Pennsylvania and part of West Virginia; Cary Hall Machinery Co., Inc., Salem, Va., is covering that state; and Industrial & Farm Equipment Corp., Baltimore, Md., is covering Maryland, two Delaware counties, and Washington, D. C. George P. Williams Co., Cleveland, Ohio, is serving the northeastern section of that state.

## Howell Adds I-H Line

The northern Illinois and northwestern Indiana distributor for International Harvester Co., Chicago, Ill., is Howell Tractor & Equipment Co. Located at 7443 S. Racine Ave., Chicago, the dealer will handle earth-



## BLAW-KNOX ROAD WIDENER SPREADS 500 TONS PER DAY ON PENNSYLVANIA WIDENING JOB

This job really rolled for D. E. Smith, Inc., of Mifflin, Pa. Their contract called for widening  $\frac{3}{4}$ ths of the stretch from 18' to 22' and the balance from 20' to 24'... spreading 2" of fines in the bottom of a 3-foot wide trench and, after compaction, spreading 10" of No. 4 crushed stone on top of the fines.

*The Blaw-Knox Model 95 Road Widener sewed up this job at a schedule trimming clip... spreading 500 tons per day, or widening approximately 3200' of highway every 10 hours!*

Speedy operation is just one way Blaw-Knox Road Wideners step up profits. They also lay concrete without forms, handle asphaltic concrete, dirt, gravel, stone or any kind of aggregate. They handle any widening jobs from 2' to 10' widths. Your Blaw-Knox distributor will gladly show you the time-saving, money-making features of the Model 95 Widener. Call him today.

## BLAW-KNOX COMPANY

Construction Equipment Division  
Pittsburgh 38, Pa.  
Offices in Principal Cities

BLAW-KNOX also manufactures a "Complete Package" of concrete paving equipment



Clamshell Buckets



Batching Plants



Multi-Foot Pavers

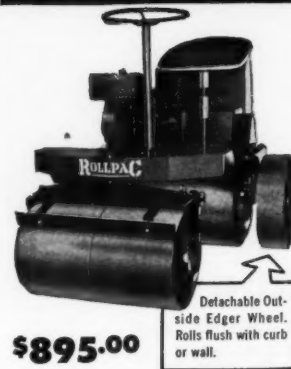
Spreaders and Finishers

Road Forms

## BLAW-KNOX BASE PAVERS LAY 400 TONS PER HOUR DEPTHS TO 20 INCHES WIDTHS TO 16 FEET



Two models available to cut weeks off base course schedule time! Blaw-Knox Base Pavers spread stone, slag, gravel, soil cement or crusher run aggregate without segregation. Straightedge leveling reduces the need for hand dressing behind the unit for accurate results.



\$895.00

Detachable Outside Edger Wheel. Rolls flush with curb or wall.

A Standout Popular-Priced One Ton Roller. Send for Catalog.

## SOILAIRE INDUSTRIES

Minneapolis 3, Minnesota

Sold by over 75 distributors in United States and Canada

CONTRACTORS AND ENGINEERS



moving and industrial power equipment manufactured by I-H, as well as motor graders and Traveloaders made by J. D. Adams Mfg. Co., and Payloaders made by F. G. Hough Co. Wayne Crane, Schramm, and Ready Power lines are also sold by the company.

T. J. LaVorene, president of Howell, has indicated that the company is considering expansion of both headquarters and personnel, and that work on the new plant facilities should begin shortly.

#### Euclid Names Dealer for Central Tennessee

The complete line of earthmoving equipment manufactured by the Euclid Division of General Motors Corp., Cleveland, Ohio, will be handled by Euclid-Tennessee, Inc., 720 Murfreesboro Road, Nashville. The company will supply the central-Tennessee sales area with Euclid scrapers, rear and bottom-dump hauling units, and loaders.

The complete line of excavators and cranes manufactured by Bucyrus-Erie, South Milwaukee, Wis., will also be handled by Euclid-Tennessee.

James R. Elrod is general manager of the new dealership, and he is assisted by John Johnston, service manager, and Henry Grisson, parts manager.

#### New Dealer for Buck

The newly authorized dealer for all hoisting machines manufactured by Buck Equipment Corp., Cincinnati, Ohio, is Builders Rental Equipment Corp., Erie, Pa. Under the management of Ray Bloomquist, the new dealer will supply the Erie sales area. The dealer also has offices in Buffalo, Rochester, and Syracuse, N. Y.

#### Haiss Names Three Dealers

The George Haiss Mfg. Co., Inc., New York, N. Y., subsidiary of Pettibone Mulliken Corp., has appointed three eastern dealers as exclusive

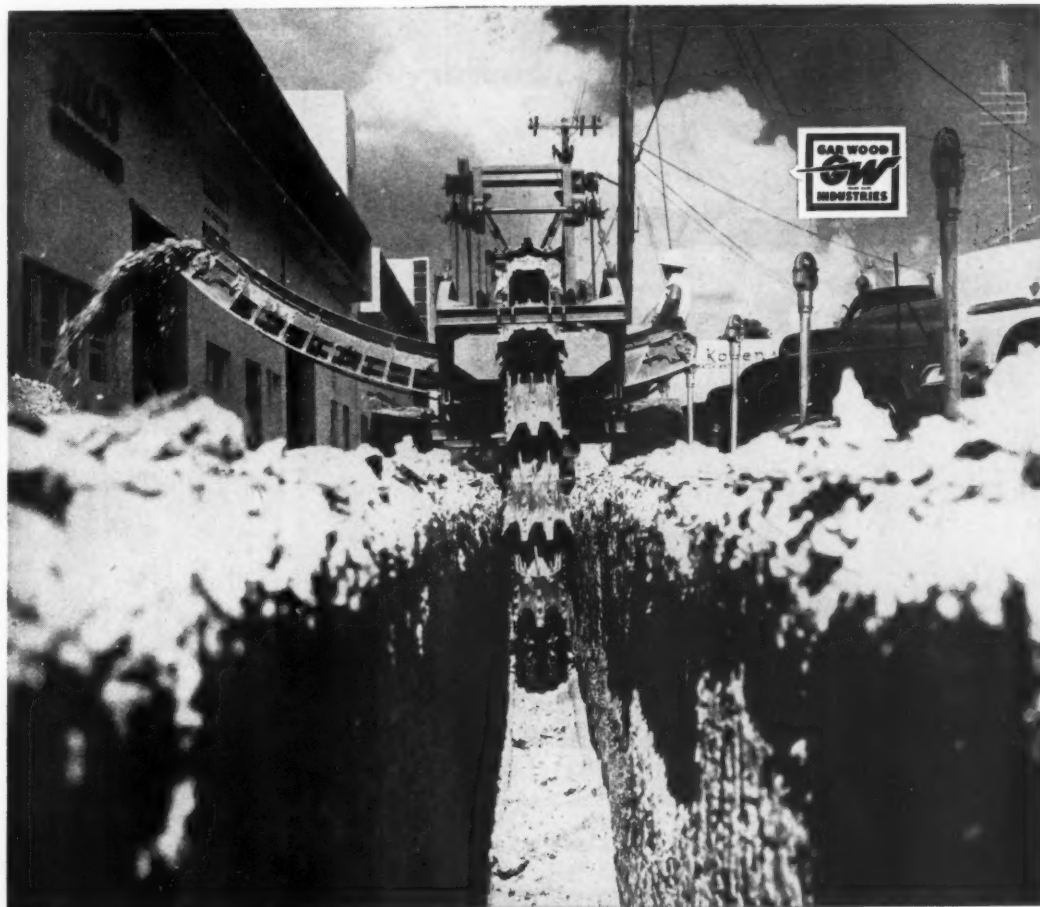
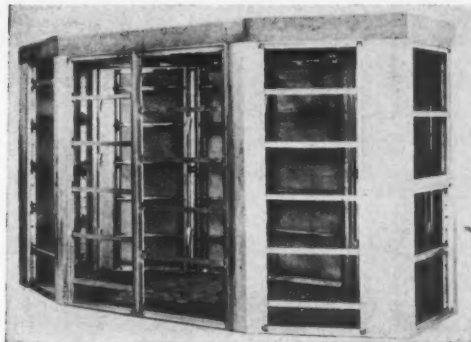
distributors of the Haiss clamshell bucket line.

The entire state of Connecticut will be handled by Friedman Equipment Co., 1310 North Ave., Bridgeport. Southern Machinery & Supply Co., 2745-51 Shenandoah Ave. N. W., Roanoke, and 3004 Kenwood Ave., Richmond, will cover the entire state of Virginia. Service Supply Corp., 20th and Erie Ave., Philadelphia, and its branch in Lancaster, Pa., will service the state of Pennsylvania.

#### Lift Slab Corp. of N. Y. Elects Perry President

The Lift Slab Corp., New York, N. Y., which recently opened new offices at 295 Madison Avenue, has elected John P. H. Perry president and director of the organization.

**SPECIAL PANELS** designed to be grouped in an octagonal shape and used in pouring concrete man-holes have been built by the Symons Clamp & Mfg. Co., 4249 Diversey Ave., Chicago, Ill. The panels were built for the Union Electric Co. of St. Louis. They consist of a magnesium frame, with a panel of plastic-faced plywood. The panels have no tie openings, but are cross-braced for strength and held together by connecting bolts and wedges. For further information write to the company, or use the Request Card at page 18, Circle No. 515.



NEW BUCKEYE 315 HELPS PUT CONTRACTOR 100 DAYS AHEAD OF SCHEDULE ON CORAL GABLES JOB

## SET RECORD DIGGING

Thru solid coral rock on Florida sewer jobs

"Oolite" is the technical name for the coral rock upon which many of the cities of southern Florida are built. It is tough, hard material—difficult to dig and unusable as backfill without crushing. But it has been successfully handled by Buckeye ditchers for over 25 years! . . . In the photo at top: A Buckeye 315 has averaged 1,700 ft. of trench, 24" wide and from 4' to 6' deep, every day—working on busy city streets in Coral Gables, Fla. The phenomenal performance of this machine has enabled the contractor, Morris Prosser, Inc., to gain over 100 days on his original estimated schedule with every expectation of finishing the job in *less than half* the time allowed. Because the action of a Buckeye ditcher breaks the coral into fine pieces, it is possible to use material as backfill without crushing—a considerable saving for the contractor . . . Another example of Buckeye's ability to cut costs by faster, more efficient performance.

No. 555

**GARWOOD INDUSTRIES, INC.**  
WAYNE, MICHIGAN



MODEL 51 IN MIAMI also cuts through "Oolite" in center of city when working on new 20 mile cut for the \$27 million sewage program.

**IF IT'S A  
WET  
JOB**

PLAY SAFE! ASK FOR A  
DEWATERING ANALYSIS BY

**GRIFFIN**

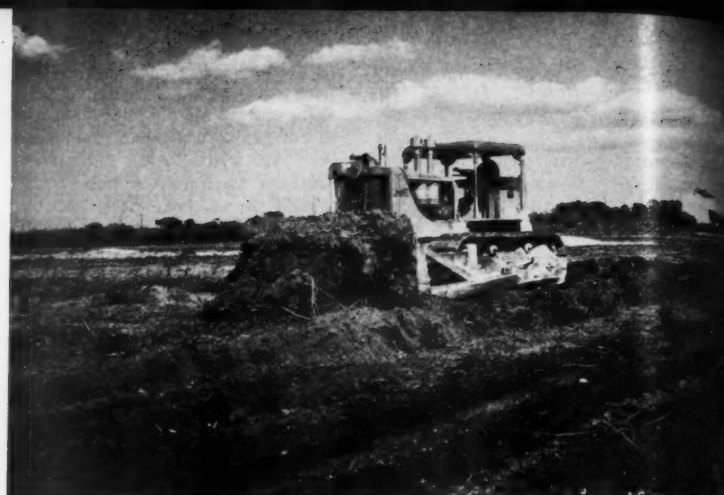
**WELLPOINT CORP.**

881 East 141st Street, New York 54, N. Y.  
Hammond, Ind. Houston, Tex. Jacksonville, Fla.

MARCH, 1955

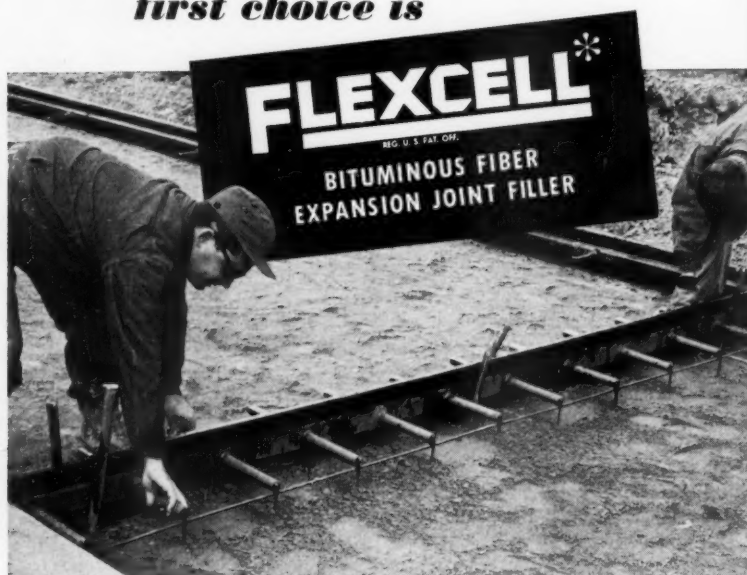


An output of 2,000 tons of road stone is a daily average for this Universal jaw crusher powered by a GM 6-110 diesel and the specially-built Grundler and Cedarapids secondary crushing and screening plant powered by a GM Twin 6-71. The portable setup works a quarry for Frank N. Butler Co., Franklin Grove, Ill.



Topsoil is stripped and stocked by an Allis-Chalmers HD-20 tractor with Gar Wood dozer and power control unit as part of initial site preparation for the Brightwater Estates housing project in Bay Shore, Long Island, N. Y. Cross Island Construction, Inc., Central Islip, L. I., is handling the grading work.

## Across America... wherever concrete meets concrete... first choice is



On bridges and airport runways, on streets, highways, thoroughways, and expressways... wherever concrete meets concrete... Flexcell Bituminous Fiber Expansion Joint Filler is doing a job! For joints that are free from bulges or crevices, that stay closed under severest traffic and climatic conditions, Flexcell Filler has won coast-to-coast acclaim.

In years of trouble-free performance on thousands of projects, Flexcell Joint Filler has proven a cost-saver in both initial expense and freedom from maintenance. Its secret lies in the resiliency of the tough, durable cane fiber board base. Millions of tiny air cells absorb pressure without extruding as concrete expands. When concrete contracts, Flexcell Joint Filler springs back to normal, keeping joint neat and smoothly closed.

Simple to handle, easy to work with, Flexcell Joint Filler provides neat, finished

joints without trimming. It is impregnated with asphalt to resist moisture, and protected by the patented Ferox® Process against dry rot and termite attack. Rough-textured surface means a firmer bond with concrete; it is ideal for work involving special cutting, tapering and fabricating. And over 70% "recovery" has been proved in laboratory tests!

Flexcell Joint Filler has long been specified by leading engineers, contractors, and architects... as well as the United States Army and Navy, and other Federal, State, and Municipal agencies. Before you start your next job, investigate the reasons for this nationwide preference.

Mail the coupon below for full data on the benefits and economics of using Flexcell Joint Filler for pavements, runways, sidewalks, curbs, gutters, driveways, concrete floors. No cost or obligation.

Another Famous **CELOTEX** Product

# FLEXCELL

REG. U.S. PAT. OFF.

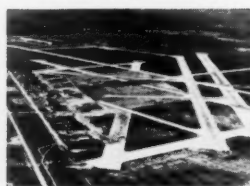
**BITUMINOUS FIBER EXPANSION JOINT FILLER**

The Celotex Corporation, 120 S. LaSalle Street, Chicago 3, Illinois

\*Flexcell is a Trademark identifying Bituminous Fiber Expansion Joint Filler marketed by The Celotex Corp.



• Rickenbacker Causeway



• Cleveland Municipal Airport



• New York State Thruway



• San Francisco-Oakland Bay Bridge



• Detroit Express Highway



## Organize New Texas Firm Of Prestress Consultants

Consulting services for specialized applications of prestressing will be provided by a new Texas firm, Prestressing Research & Development, Inc., with offices in the Transit Tower, San Antonio. Research studies and investigations, specific design projects, and services to product manufacturers are part of the company's planned scope.

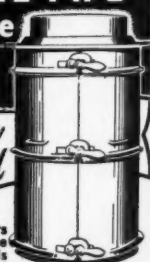
J. J. Mennis and F. E. Koebel are president and vice president, respectively, of the new firm. Others associated with the organization are E. C. Molke, formerly chief engineer of Preload Engineers of Arlington, Va., and T. J. Gut, vice president of Texas Stressed Concrete Corp. All the men have had experience in the design and construction of prestressed concrete structures in this country.

## Koehring Appoints Two District Representatives

Two new district representatives for Koehring Co., Milwaukee, Wis., are John E. Mahoney, Jr., and D. C. Kilpatrick. Mr. Mahoney will cover the south Atlantic territory, working with distributors in Alabama, Florida, Georgia, North and South Carolina,

**For the FINEST  
CONCRETE PIPE  
You Need the  
FINEST  
FORMS!**

**"Quinn"  
Standard**



Backed by over 40 years of reliable service, the **QUINN STANDARD** is recognized as the finest concrete pipe form the world over. Thousands of pipe manufacturers, from the smallest to the largest, look to Quinn for equipment to produce the finest concrete pipe at the lowest possible costs.

• **QUINN HEAVY DUTY PIPE FORMS**

For making pipe by hand methods by either the wet or semi-dry process. Sizes for pipe from 10" to 120" and larger. Tongue and groove or bell end pipe in any length desired. WRITE TODAY for complete information and estimate.

Also manufacturers of  
**QUINN CONCRETE PIPE MACHINES**

**Quinn WIRE & IRON WORKS**  
BOONE, IOWA

**CONTRACTORS AND ENGINEERS**

## MAIL COUPON TODAY

The Celotex Corporation, Dept. CEM-35  
120 S. LaSalle St., Chicago 3, Illinois

Without obligation, please send me complete data and prices on Flexcell Bituminous Fiber Expansion Joint Filler.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_





Into the New York City skyline rise three new buildings. At left, a P&H 255-A truck crane with 80-foot boom and 30-foot jib positions a structural member for an 18-story apartment building. Grand Iron Works, New York, N. Y., is doing the erection work. At center, stiffleg derricks handle structural steel as American Bridge Division

crews push work on the 42-story block-square Socony Vacuum building, a \$45-million structure which will be the sixth largest office building in the nation. At right, a 240-foot-high Patent Gold Medal tower with a Lambert-National single-drum hoist lifts material to the upper floors of a 20-story building.

Virginia, and West Virginia.

Mr. Kilpatrick's territory includes North and South Dakota, Montana, Nebraska, Iowa, Minnesota, Kansas, western Missouri, and the Canadian provinces of Alberta, Saskatchewan, and Manitoba.

Both men will represent Koehring and its three subsidiary firms, Parsons Co., Newton, Iowa; C. S. Johnson Co., Champaign, Ill.; and Kwik Mix Co., Port Washington, Wis.

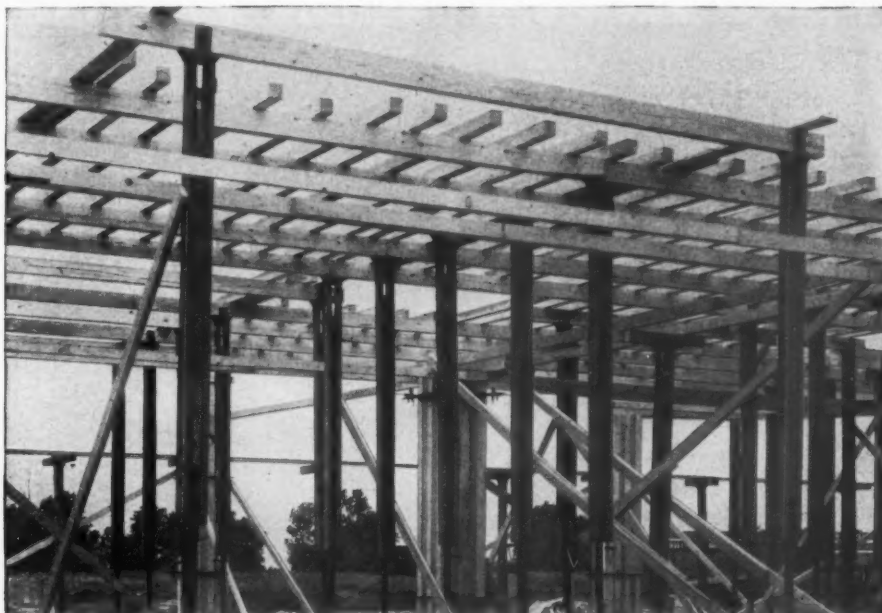
### Research Program Studies Engines for Military Use

Engineers at the U. S. Army Corps of Engineers Research and Development Laboratories, Fort Belvoir, Va., in conjunction with private industry, are developing a group of seven engines in the 1/2 through 20-hp range. Engineers expect these machines eventually to replace commercial engines in this range on military projects.

Both two and four-cycle-type designs are being investigated prior to making a selection for military design.

The new engines are being designed to operate efficiently for a minimum of 1,500 hours before major overhauling—approximately three times the life capacity of comparable commercial machines. Since the machines are being designed to work under a wide variety of environmental extremes, they will be easier to service and maintain and lighter in weight.

Initial cost of the new machines is about twice that of their industrial counterparts, but savings realized from standardization and increased performance are expected to more than offset the increased initial cost of the equipment.



Metal Scab & Tee Head. Scab slides down flush with top of shore head when not in use.

Note use of Symons Column Clamps.

## Symons Safety Shores Cut Costs on All Shoring Jobs

Symons Safety Shores keep all shoring jobs moving on a dependable, time-saving, cost cutting schedule. Their trouble-free performance is a matter of record. Here are 4 reasons why—

**SAFE-SWAY BRACING** . . . easily secured at any point.

**SCAB, TEE HEAD and EXTENSION** . . . enable shore to fill every shoring need.

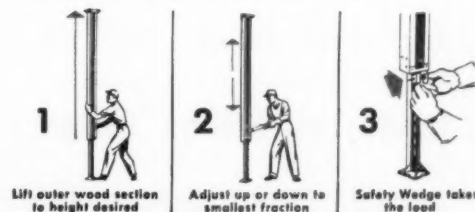
**WORKMEN PREFER** . . . handling this lighter, easily adjusted shore.

**LIFTING JACK and ATTACHED WEDGE** . . . make possible easy reshoring under heavy load.

Profit by the experience of the Construction Industry's leading builders. Use Symons Shores for those heavy load shoring jobs. There is no better way to make that tough job easy.

Send for Symons Engineering Tables for slabs, columns and beams. These tables will be a big help to your estimator, superintendent and carpenter foreman for determining forming, shoring and clamp requirements.

**LARGE STOCKS OF SHORES AVAILABLE FOR RENTAL  
RENTAL MAY APPLY ON PURCHASE—90 DAY OPTION**



### THE BEST DRILL YOU CAN BUY FOR MAKING HOLES IN MASONRY

Lengths up to 36". Standard diameters from 3/16" to 5". Other diameters up to 8" on special order. Use with standard electric drills or air motors.

**FREE  
FACTORY SERVICING.**

**TERMITE DRILLS, INC.**

87 N. Lotus Ave., Pasadena 8, Calif.

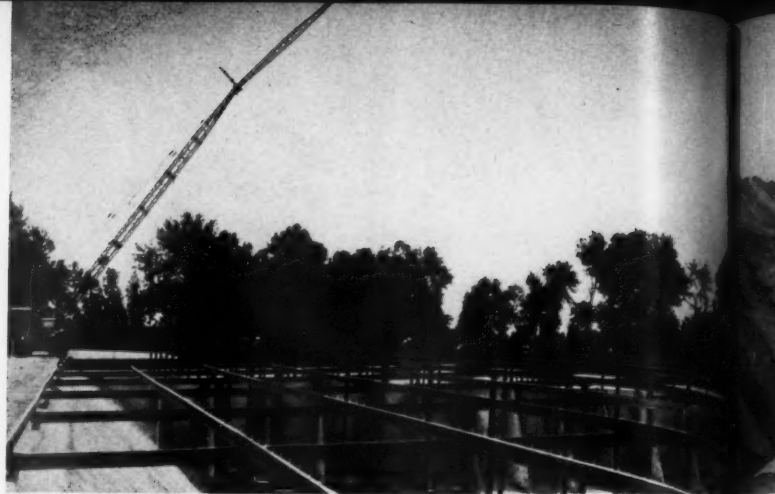
**TERMITE  
ROTARY MASONRY DRILLS**

MARCH, 1955

**Symons** CLAMP & MFG. CO.  
4251 Diversey Ave., Dept. C-5, Chicago 39, Ill.  
Send catalog and information:  
☐ Shores ☐ Column Clamps ☐ Forms  
Name \_\_\_\_\_  
Firm Name \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_



Shot rock, to be crushed and used on an Idaho Department of Highways project near Kellogg, is loaded into an Allis-Chalmers motor wagon by a Manitowoc 3500 shovel with 2½-yard Esco dipper. Goodfellow Brothers, Wenatchee, Wash., is the contractor on the state job.



Final steel erection on the Santa Ana, Calif., reservoir is handled by a Lorain crane before the facility—which required 16,000 cubic yards of excavation—is enclosed with Kaiser aluminum sheets. The sheets will give the reservoir a corrosion-resistant and heat-reflecting cover.



## Mixer Blade Life Increased 19 Times by **Hard-Facing**

Blades hard-faced with HAYSTELLITE tungsten carbide rod have been in operation for 20 months—and are still in good condition. They have mixed 36,000 cubic yards of concrete while operating 3 shifts a day, 6 days a week. Unprotected cast steel blades had to be replaced every 4 to 5 weeks while operating under the same conditions. More than 19 shutdowns have been eliminated by hard-facing, and repair and replacement costs have been cut sharply.

Big savings like this are not unusual when HAYNES hard-facing products are used to prolong the life of equipment. These wear-resistant ma-

terials give outstanding service when used to protect conveyor screws, buckets, crushers, tractors, and other equipment exposed to abrasion, corrosion, impact, or heat.

Your local dealer carries a complete line of HAYNES hard-facing alloys, including HAYNES iron and nickel-base rods, HAYNES STELLITE cobalt base rods, and HAYSTELLITE tungsten carbide tube rod. Ask him for descriptive literature. If you don't know the location of your local dealer, write to Haynes Stellite Company, a Division of Union Carbide and Carbon Corporation, Kokomo, Indiana.

See...

or

Write...

Your local Haynes Stellite Dealer

to Haynes Stellite Company

"Haynes," "Haynes Stellite," and "Haystellite" are registered trade-marks of Union Carbide and Carbon Corporation.

### Firm Offers New Service In Geophysical Surveys

Organization of a geophysical survey division to serve the heavy construction industry has been announced by Gahagan Construction Corp., New York, N. Y. The new technological division is the result of experiments and field applications over the last two years by the New York firm, working closely with top consulting engineer firms.

Ken Sandbach has been named vice president of the new division, and Rev. Daniel Linehan, S. J., Jesuit geophysicist who heads Boston College's Weston Observatory, is chief of operations.

As developed by the Gahagan company, the geophysical surveys utilize seismic wave measurement to give an accurate and continuous picture of hardpan and bedrock stratas and the depths at which these will be found. Also, it is usually able to indicate the varying characteristics of the materials in the overburden. Surveys can be made under water as well as on land. Accuracies within 1 to 5 per cent of actual are routine, the company reports, and savings in time, money, and trouble are expected to result from use of this new method in place of the old and often unreliable boring method.

Gahagan techniques and portable equipment have already been used on the Baker River Hydraulic Development in Washington, the St. Lawrence Power Project, the Massachusetts Turnpike, and at the site of the proposed Narrows Bridge between Brooklyn and Staten Island, N. Y.

Among the principal projects of Gahagan Construction Corp. and its subsidiary, Gahagan Overseas Construction Co., Inc., were the 40,000,000-cubic-yard fill for Boston's Logan

### WAIT!...Before you buy

any concrete cutting blades . . . Watch for the Amazing New "CLYDE" Duo-Bond Blades . . . for ALL Machines . . . at Lowest Prices ever offered.

Sensationally acclaimed on the Ohio Turnpike and other major paving projects.

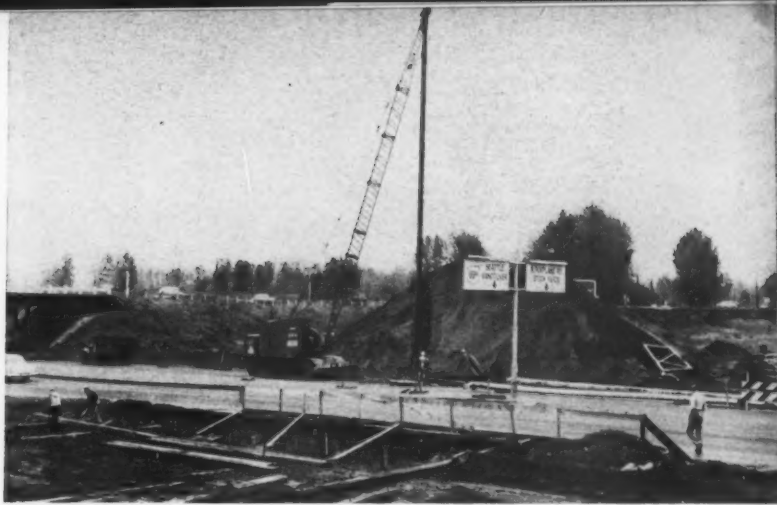
Write THE CLYDE COMPANY, CE Division

P. O. Box 72 RACINE, WISCONSIN  
CONTRACTORS AND ENGINEERS





Ground water makes it necessary for a Griffin Wellpoint system to work almost constantly during installation of sanitary and storm sewers in Fridley, Minn. Here, Phelps-Drake Co., Inc., Minneapolis, uses a Lima Paymaster to lay 72-inch pipe. GM diesels power the crane and the wellpoint pumps.



Traffic rolls smoothly over U. S. 99 near Portland, Oreg., as a Bucyrus-Erie 22-B crane with a Vulcan No. 1 pile hammer sinks piling for a new overpass. The job is being done by Consolidated Freightways, Portland, under a subcontract from Lee Hoffman, Beaverton, Oreg.

International Airport; the fill for New York's Idlewild Airport; the Belt Parkway in New York City; the Quonset Point, R. I., Naval Air Station; the Florida Everglades Flood Control Levee; and U. S. Navy projects in the Panama Canal Zone.

Walter H. Gahagan is chief executive officer of the 57-year old firm.

#### N. Y. Thruway Authority Reorganizes Staff

In order to improve operational efficiency and supervision of the cross-state superhighway, the New York State Thruway Authority has reorganized its staff.

As newly appointed general manager of the thruway, Holden A. Evans will be responsible for the administration of the expressway and its staff.

The former director of public relations for the New York State Department of Public Works, William J. LaFleur, has joined the Authority as bridge maintenance supervisor.

#### Building to Have New Air Conditioning Units

A new method of air conditioning, utilizing independently operated individual room units, is being constructed in the 16-story apartment facility being built at 20 E. 68th St., New York, N. Y.

Each unit in the system is built into the exterior wall and does not project outside the building or into the room. Manufactured by Airtemp Construction Corp., a subsidiary of Chrysler Corp., Dayton, Ohio, the unit will fit into a wall underneath the window. In this position, the air conditioner will not interfere with closing or opening of windows, and will not block the view or daylight.

#### EAGLE BREAKER BALLS

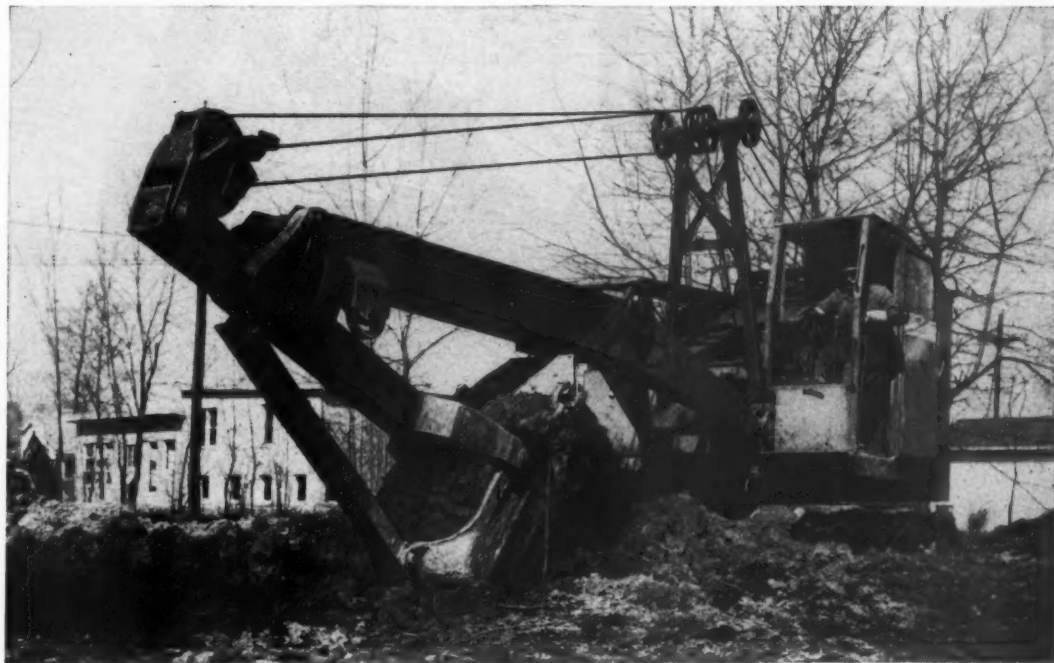
Available of abrasion, impact resistant Ni-Hard nickel-chromium-iron alloy for high breaking efficiency and tough semi-steel for regular jobs. Pear shaped, with easily replaced hook, in 5 sizes; 1500 lbs. to 9000 lbs. Spherical in 6 sizes; 1275 to 4350 lbs. Ask for Bulletin 952, on breaker balls, line weights, pile hammers.

Largest Manufacturers of Concrete Aggregate Washing-Classifying Equipment—Send for Catalog 55.

#### EAGLE IRON WORKS

159 Holcomb Ave., Des Moines, Iowa

## Where parts must be EXTRA TOUGH specify AMSCO® MANGANESE STEEL



Amsco backhoe bucket at work

Digging! Crushing! Handling! Amsco manganese steel parts work up to 10 times longer under punishment . . . because manganese steel can easily absorb heavy impact and abrasion. Hard work toughens the metal . . . it work hardens

to as high as 550 Brinell. The pounding, grating action of rock and ore only polishes manganese steel.

To get maximum life out of your equipment, specify Amsco manganese steel parts from the manufacturer.

#### DIGGING

backhoe buckets  
dippers and parts  
repointers  
dragline buckets and parts  
dragline chain  
sheaves  
pinions  
crawler shoes

#### CRUSHING

concaves  
mantles  
jaw plates  
mill liners  
hammers

#### HANDLING

bulldozer blades  
tractor rollers, idlers  
sprockets, grouser bars  
truck beds  
grizzle parts  
ore car wheels and liners  
sheaves, gears, pinions

Amsco also produces other alloy steels with maximum wear resistance under particular conditions of service.



**AMERICAN MANGANESE STEEL DIVISION**  
Chicago Heights, Ill.

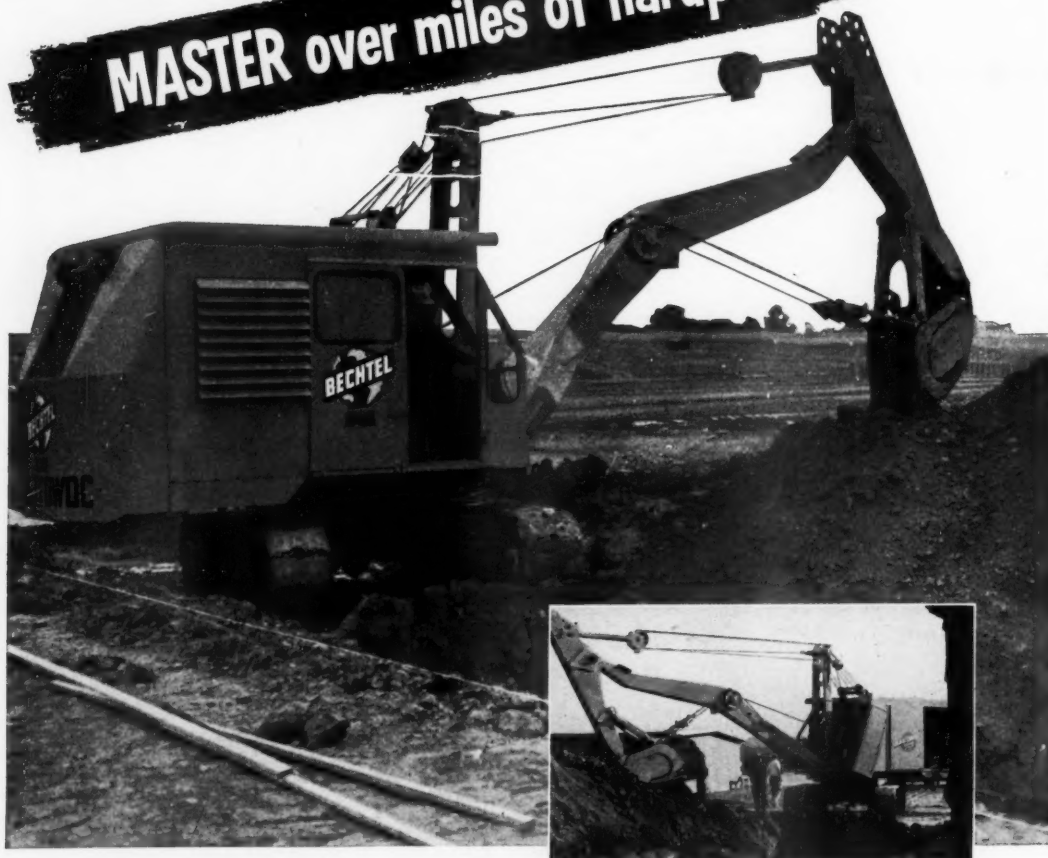


Huge boulders make the going rough for this Caterpillar D8 as it helps clear the right-of-way for a railroad line in Brazil. When work is completed by Construtora Hepacare, Brazilian contractor, the relocated line will run through the hilly country between the major cities of Sao Paulo and Rio de Janeiro.



Modernization work on U. S. 30 in Nebraska nears completion as workmen fill joints in the widened and resurfaced road with Presstite joint compound, applied cold with a Graco pump. An Ingersoll-Rand 125-cfm Gyro-Flo compressor provides air for the operation.

# Manitowoc... MASTER over miles of hardpan



## 2 Manitowoc One-Yard Hoes lick tough hardpan on refinery job for BECHTEL CORP. at Anacortes, Washington

When the going got rough and other units scratched, picked and hacked to the tune of lost time and low production — it was time to bring in the Manitowocs!

The two "1600" hoes waded in and the hardpan took a pasting. Mile after mile, these "work horses" dug in — 25 ft. deep at times — and came up with full dippers of pay dirt every time.

The trench had to be 9 ft. wide in many spots and Manitowoc's boom strength and stability enabled it to trim trench edges clean and neat

without traveling. This superior feature — plus Manitowoc's 37' reach resulted in no lost motion and more miles of trench per shift.

Need a big-producing hoe? Get the facts on the Manitowoc 1600. Manitowoc Engineering Corp., Manitowoc, Wis.

**MANITOWOC**

SHOVELS  
1-5 YD.

*Special Line*

CRANES  
20-100 TON

## Blaw-Knox Outlines New Expansion Program

A five-point program designed to integrate the manufacturing operations on its several lines of products, has been put into action by the Blaw-Knox Co., Pittsburgh, Pa. The expansion and modernization program is calculated to provide better service for the company's major markets.

Chief among the five points is the consolidation of manufacturing operations, now carried on in Elyria, Ohio, Nunda, N. Y., and Pittsburgh, in a single plant scheduled for completion this year in Mattoon, Ill. The improvement of existing facilities at the Blawnox, Pa., plant, where industrial grating, power transmissions, clamshell buckets, and other basic company products are manufactured, is another project. Centralized research and development functions are also provided for by the program.

## Worthington Corp. Makes Appointments

George E. Bowdoin, has joined Worthington Corp., Harrison, N. J., as assistant to the president. Formerly, Mr. Bowdoin was associated with U. S. Hoffman Machinery Corp.

Worthington's Detroit district office is now in charge of Roland W. Bartlett, who previously held the post of sales engineer in the company's Washington, D. C., district office.

Clarence S. Wentworth, manager of the company's Detroit district office, has been named central regional sales manager by the pump manufacturer. He succeeds William A. Meiter, who has been promoted to general sales manager of the organization.



**KIESLER**  
SINCE 1892

2-LEVER ARM  
CLAM SHELL  
BUCKETS  
with  
POWER

ON BOTH SHELLS

"A PAYLOAD EVERY TRIP"

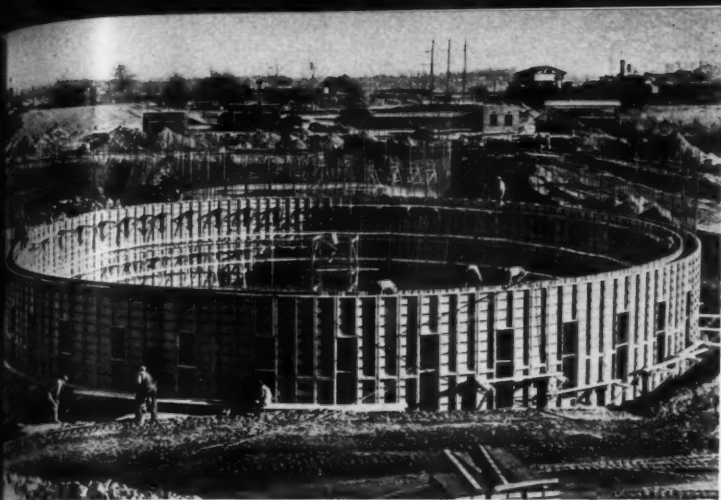
The ONLY Bucket that DIGS-IN  
Instead of Lifting-Out.  
Write for Literature.

JOS. F. KIESLER COMPANY

934 W. HURON ST. CHICAGO 22, ILL.

CONTRACTORS AND ENGINEERS





One of six digester tanks for the sewage-treatment plant at Birmingham, Ala., utilizes about 10,000 square feet of Symons forms for the first lift of concrete. Pour openings, to keep the concrete drop within 4 feet, will be covered with panels as concrete is placed for the 100-foot-diameter and 29-foot-high structure.



Earthmoving teamwork is demonstrated by a pair of International TD-18A tractors and matched Bucyrus-Erie scrapers as they move 100 cubic yards of material an hour for a small dam on a Sedgewick, Colo., ranch. The earth dam was completed by Tony and Guido Manuella, Sedgewick, in slightly less than 11 hours.

### HRB Study Estimates Cost Of Truck Maintenance

If weather conditions are excepted, maintenance and repair work account for almost half the time lost by dump trucks on a job, a study conducted by the Highway Research Board reveals. The study, made on 159 single-unit dump trucks hauling base and surface-course materials on four highway surfacing jobs, shows that maintenance and repair took up 17 per cent of the available working time, or about 1.7 hours per truck during a 10-hour day.

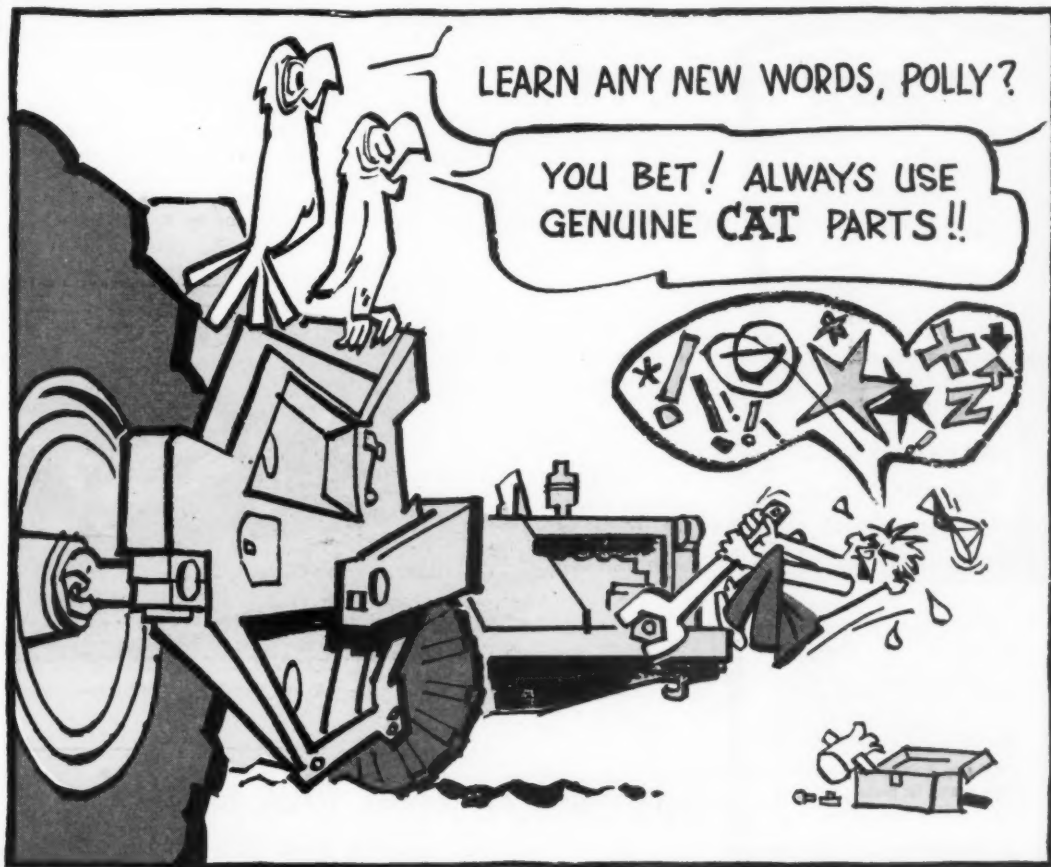
The cost of the work on a truck amounted to about \$7.90 during a 10-hour day, or \$17.50 per 1,000 ton-miles of hauling. This cost excludes the price of labor. The average hours of labor required for maintenance and repair came to about 1.75 hours, or about 3.8 man-hours per 1,000 ton-miles of hauling. This included the operator's rate of payment for the time he was unoccupied.

No correlation was found to exist between the length of delay and the cost of the repair. While tire trouble accounted for only 6 per cent of all downtime, replacement of tires and tubes accounted for 37 per cent of the average daily amount of \$7.90 spent on each truck.

### Onan Appointment

The appointment of Carl Brady as zone sales manager has been announced by D. W. Onan & Sons Inc., Minneapolis, Minn., manufacturer of electric generating plants. Mr. Brady's territory covers the states of Nebraska and South Dakota, and parts of Iowa, Kansas, Missouri, and North Dakota.

He will make his headquarters in the Minneapolis office.



Down time sure brings out the classiest words in a man's vocabulary. Best way to avoid it is to insist on genuine CAT\* parts every time. Then you're sure of getting parts that are made to the latest design, precisely manufactured of the right materials, rigidly inspected and tested.

#### Take the parts in the engine's heat zone, for example.

Different makes of liners, pistons and rings look a lot alike. But Cat cylinder liners are "wet type" design, made of hardened alloy iron with inner surfaces "Hi-Electro" hardened. Genuine Cat pistons are made of one-piece aluminum alloy castings, with a cast-iron band bonded into

the top to form the hard-service top ring groove. And that top ring—if it's genuine Caterpillar—is heavily chrome-faced. Each Cat ring is individually cast from specially alloyed iron. With substitute parts: who can be sure?

The difference on the job: Caterpillar-built parts in your engine's heat zone give you new-machine performance, shorter break-in time, longer life and the true economy of reduced repair costs and uninterrupted production. With substitute parts: who can be sure?

**Better get genuine Caterpillar parts every time.**

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

**DECALS for**

**TRUCK DOORS**

**FOREMEN BROTHERS**

**STORER DECAL CO.**

CRISTAL LINE CONSTRUCTION CO. INC.  
 1558 SO. MARKET  
 WICHITA, KANSAS

LESS THAN  
 \$5 PER SET

& FINEST QUALITY  
 & PERSONALIZED DESIGN  
 & 10 DAY DELIVERY

FOR SKETCHES and  
 SAMPLES WRITE TO...





Tough clay material is picked up in a cut by a Euclid scraper pushed by an Allis-Chalmers HD-20 tractor. Average loads carried by these scrapers amounted to 16 or 17 yards.

C&E Staff Photos

## Regrading job changes rural route into modern highway

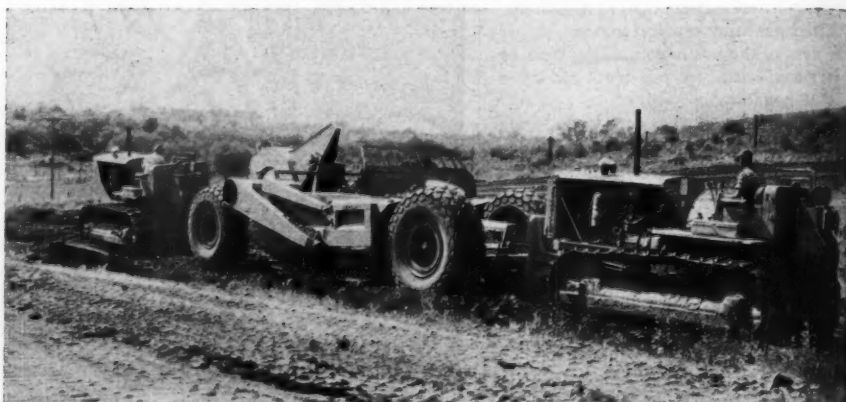
Grading work completed last year, and paving—scheduled to be done under a future contract—are turning a country road in Iowa into a modern highway. Designated Iowa 90, the road runs through rough and rolling country from West Des Moines to Dexter. As a result of last season's grading, the roadway now has a 48-foot top, 3 to 1 and 4 to 1 foreslopes, 2½ to 1 backslopes, and 10-foot flat-bottom ditches. On three long grades, another 6 feet has been added to provide a lane for slow-moving trucks. Summits have been cut and hollows filled to flatten grades.

Before this work was done, the road—originally graded in 1937 and 1938—had a narrow roadway, steep side slopes and grades, and inadequate sight distances. The 17-mile regrading job, done by E. M. Duesenberg,

Inc., Clear Lake, Iowa, required a total of 1,600,000 cubic yards of dirt to be moved to make the new cross section and grade conform to modern standards for important highways.

To match the new grade and section, bridges were raised and widened, and culverts were lengthened. This part of the improvement was handled under a separate contract by Christensen Bros., Sioux City, Iowa. Since work on both these contracts started at approximately the same time, Duesenberg began its job on short stretches so that grading did not interfere with the bridge work. As bridges and culverts were completed, Duesenberg started working from one end of the roadway, completing the grading as he went back over the route.

Frequent rains between April and



A Caterpillar No. 80 scraper is pulled and push-loaded by two Caterpillar D8 tractors in one of the cut sections where the haul is less than 1,000 feet. Two grading crews were on the 17-mile job, one handling long and the other short hauls.

### GRACE



3 sweeper models, axle, engine or tractor powered.



Sheepsfoot Rollers  
250 to 600 psi.

### GRACE Asphalt and Compaction Equipment



Rapidspray Maintenance Distributors.  
Also heaters for production melting  
of barreled asphalt.



Rapid Fire circulating heaters heat and  
unload large tanks of asphalt.



Chip spreaders 8' to 12' width. Also  
asphaltic concrete spreaders.



Pneumatic rollers 7 to 50 tons.

**W. E. GRACE MFG. CO.**

6003 South Lamar St., Dallas, Texas

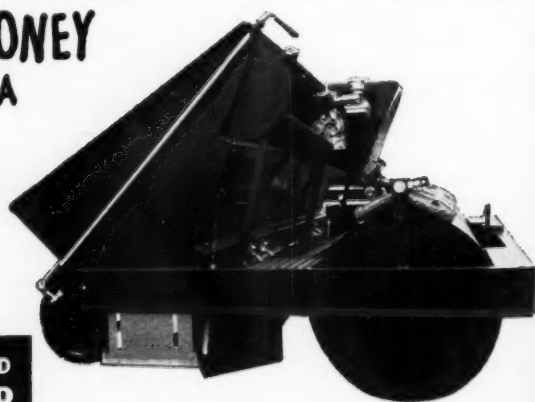
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WHEN YOU BUY A  
**PAVING  
MACHINE**



## OVERMAN'S STONE AND BITUMINOUS SPREADER

... will do your work and cost you FAR LESS than most any other paver. Don't be deceived by appearances. This simply built, easily operated spreader will lay a pavement as good or better than other heavy complicated machines. It is not made for just the small jobs, but for ANY job ... convenient for the small ones, speedy for



the large ones. OVERMAN SPREADERS are saving time and money for contractors everywhere.

It will pay you to investigate before you buy. Let us prove to you that this machine will cost less to buy and less to operate.

Write today for descriptive bulletin of the spreader designed and built by a paving contractor.

**I. J. Overman Mfg. Co.**  
**BOX 203 MARION, IND.**

CONTRACTORS AND ENGINEERS





One of the six Euclid scrapers on the job is push-loaded by an Allis-Chalmers HD-20 in one of the deep clay cuts. In the background, a Caterpillar No. 12 motor grader shapes the finished roadway.

October, when the grading was completed, sometimes made it impossible to work in the sand and silt soil. At one time, work had to be stopped altogether for ten days. But when weather permitted during these weeks, crews worked 11 hours a day, six days a week.

#### Sublet Clearing and Grubbing

Trees and brush, had been allowed to grow on slopes and other unused parts of the right-of-way since original grading was done about 18 years ago. The tough job of clearing and grubbing, subcontracted to Whisler-Burgher, Centerville, Iowa, was done by a pair of Caterpillar D8 tractors with dozers. Trees and brush were burned on the right-of-way.

Grading was divided between two crews on the basis of the length of hauls. One spread of three Caterpillar D8 tractors with Cat 80 scrapers worked short balances and the ends of the cuts in some of the longer balances. A D8 pusher helped on the loading cycle. Maximum hauls for this equipment were normally less than 1,000 feet.

The other crew operated a fleet of six Euclid scrapers which were push-loaded by a Cat D8 and an Allis-Chalmers HD-20. This equipment made normal hauls up to 4,500 feet and hauled some of the glacial clay surfacing material even greater distances. On hauls of 3,500 to 3,700 feet, the scrapers completed round trips in 7 to 8 minutes. Of this time,

only about one minute was spent in loading.

Fills were compacted by LeTourneau sheepfoot rollers, two pulled by Caterpillar DW10 rubber-tire tractors and the third by an International TD-18. Caterpillar D6 and D7 tractors and dozers shaped the fills as material was placed, and finishing was done by three Caterpillar No. 12 motor graders.

#### Encounter Clay and Rock

Much of the excavation was in tough clay soil which came into the scraper bowls in rough chunks. The operators heaped each load high and averaged 16 to 17 yards of pay dirt per load in spite of the rough material.

Limestone rock, encountered in some of the cuts, was scarified with a Caterpillar ripper pulled by a Caterpillar D8 tractor. When loosened, the material was loaded and hauled by the scrapers. Fills in some of the deepest hollows were built up as much as 50 feet. The deepest cut was 55 feet deep and measured 375 feet across the top. The grade was topped with selected glacial clay and gravel salvaged from the old road.

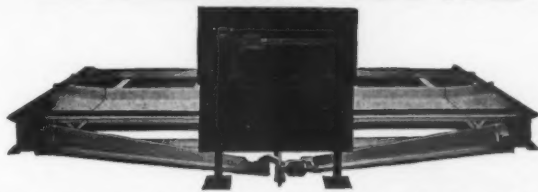
#### Personnel

Two superintendents for E. M. Duesenberg, Inc., were V. E. Stout, in charge of the rubber-tire scraper spread, and Jack Hepp, in charge of the tractor-scraper. Fred H. Brockmann was resident engineer for the

Iowa Highway Commission. Harry Webb and Roy Johnson were inspectors. John G. Butter is chief engineer for the Iowa Highway Commission, and C. L. Gleason is construction engineer.

THE END

## WINSLOW—PORTABLE TRUCK SCALE "THE CONTRACTORS' SPECIAL SCALE"



For use at temporary and permanent locations—at stock piles and by bituminous material contractors at the job site. Capacities: 15-18-20-30 tons.

Write us for name of your nearest distributor.

**WINSLOW SCALE COMPANY**

P. O. Box 1198

Terra Haute, Indiana

## RUBBER Makes it...



## KAPCO RUBBER ASPHALT JOINT SEALER

Kapco Rubber Asphalt Joint-Sealing Compound, manufactured in Keystone's modern Chicago Heights plant, meets Fed. Spec. SS-S-164 (supersedes Fed. Spec. SS-F-336a), also C.A.A. Spec. P-605, and all State Highway Department Specs. for this type of seal. It comes in 50# strippable bags designed for full protection and ease of handling.

Order separately or in combination with other KAPCO products which include famous Kapco Tongue and Groove Joint, Kapco Fibre or Fibreglas Expansion Joint, Kapco Concrete Curing Compound, etc.

For your own convenience, why not order all of your asphalt road-building materials from one source!

- ★ BETTER ADHESION!
- ★ WATERPROOF!
- ★ EXPANSIBLE TO WITHSTAND BOTH EXTREME HEAT AND COLD!

WE GUARANTEE PROMPT SERVICE!



## KEYSTONE ASPHALT PRODUCTS COMPANY

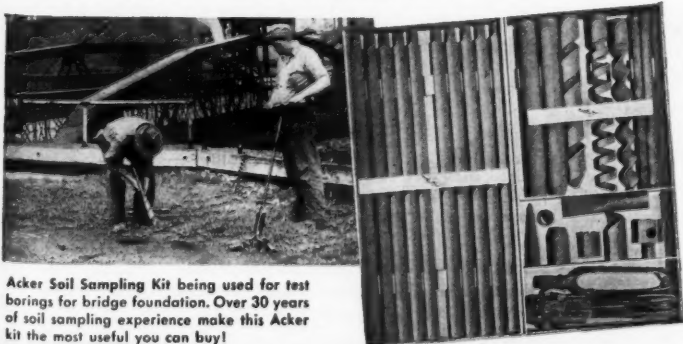
DIVISION OF AMERICAN-MARIETTA COMPANY  
General Offices: American-Marietta Building, 101 East Ontario Street, Chicago 11, Illinois

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use an ACKER SOIL SAMPLING KIT for accurate sub-surface information

With accurate sub-soil information, you avoid costly trouble later on. And, what better way to get this information than with a portable, easy to use Ackers Soil Sampling Kit. For here is a versatile collection of twelve soil sampling tools packed in a handy steel kit that can be carried in any car.

Write today for prices and Bulletin 26, C&E.



Ackers Soil Sampling Kit being used for test borings for bridge foundation. Over 30 years of soil sampling experience make this Ackers kit the most useful you can buy!

**ACKER DRILL CO., Inc.**

725 W. Lackawanna Avenue  
Scranton, Penna.

a complete line of Diamond and Shot Core Drills, Drilling Accessories and Equipment

MARCH, 1955



The Model 70, one of three new Wayne ¾-yard excavator-cranes, is shown in drag-line use.

### Announces New Line of 3/4-Yard Excavators

■ A new line of ¾-yard excavators is being introduced by Wayne Shovel & Crane Division, American Steel Dredge Co., 2000 Taylor St., Ft. Wayne, Ind. Three of the new Wayne excavator-crane models are already in production: the crawler-mounted Model 70 and the truck-mounted Models 50A and 50B.

The new Wayne ¾-yard machine has many new standard and optional features, and, it is emphasized, the buyer can specify exactly the crane or excavator which meets his individual requirements. The company also points to its policy of not loading machines with unwanted or unnecessary accessories so that initial investment costs are substantially lowered. Optional equipment, such as independent boom hoist, friction-type swing lock, double-load rollers and power lowering on the load line, can be added later without changing major assemblies, even though the machine is in the field.

Furthermore, the basic Wayne ¾-

yard model has been designed with all major wearing parts interchangeable throughout the machine. For example, the clutch parts of the hoist drum assembly are interchangeable from right to left-hand position. As a result, only one set of replacement parts need be stocked. This economy feature also applies to the reversing shaft-clutch assembly. Antifriction bearings are used on both assemblies.

Other features of the Wayne machine include a positive crawler lock and one-lever steering control in the crawler model, and a 19-foot trench hoe boom which permits a 31-foot 2-inch reach and a digging depth of 20 feet 5 inches. All assemblies are readily accessible for maintenance.

Models 70, 50A, and 50B are presently available as a shovel, trench hoe, crane, clamshell, and dragline. Production will continue on the Wayne ½-yard line.

For further information write to the company, or use the Request Card at page 18. Circle No. 523.

### Electronic Scale Weighs Moving Motor Vehicles

A new and more effective method of surveying highway loads has been made possible by the development of an electronic scale which weighs motor vehicles as they move at normal speeds along highways.

The scale, developed by the U. S. Bureau of Public Roads, was first tested on the Shirley Highway in Virginia, about 20 miles south of Washington, D. C. In operation, it indicates and records weights of moving vehicles with accuracies approaching those obtained by static weighing. It is expected to provide a better means of classifying vehicles for toll rates and for enforcing license, tax, and load-limit laws.

The Virginia installation consists

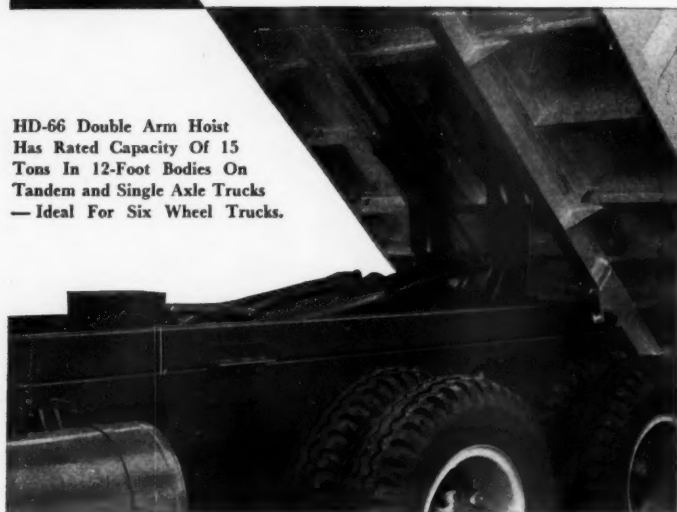
of a concrete pit, covered by a 3 × 10-foot platform flush with the surface of the road. The four corners of this platform are supported by small load cells incorporating resistance wire strain gages made by Baldwin-Lima-Hamilton Corp., Lima, Ohio. These gages are bonded to vertical columns in the cells. The four load cells are arranged so that the entire load passing the platform is shown on an oscillograph. Several other devices may also be used as recording units with the electronic scale.

A higher degree of weighing accuracy and improved operation are expected from a newer version of the road scale which will be minus some of the "bugs" found in the first one.

## How!

### Handle Extra Heavy Payloads with the MARION TWIN 66 HOIST

HD-66 Double Arm Hoist  
Has Rated Capacity Of 15  
Tons In 12-Foot Bodies On  
Tandem and Single Axle Trucks  
— Ideal For Six Wheel Trucks.



### Extra Profit Features *that Count*

- Low oil pressure operation for smooth lifts without pressure surges.
- Exclusive equalizing double-arm lift hoist provides outstanding performance.
- Rugged, heavy duty pump provides faster dumping cycle.
- Class 12 HABMA rating of 15 tons.
- Economical to operate . . . compact . . . dependable for long life operation.



*"Designed on the Job"*

## MARION

BODIES AND HOISTS

MARION METAL PRODUCTS CO., MARION, OHIO, U. S. A.

A complete line of standard and special hydraulic hoists and dump bodies to fit every need.

**ANNOUNCING . . . The most  
revolutionary achievement  
in ARC WELDING equipment  
in years!**

**BREN/WELD**  
MODEL 200 AW

**Weights only 65 lbs. . .  
Carry it to the job!**

Patent Pending

**OBSOLETE ALL OTHER WELDERS OF COMPARABLE RATING**

List Price  
\$169.50  
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**KASSON**

Manufactured by  
BRENNEN, BUCCI  
& WEBER, INC.  
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**FIRST TRULY PORTABLE  
200 AMP. OUTPUT  
ARC WELDER**

Sensational new transformer development produces far more power to pound! The BREN/WELD does work of conventional welders 4 or 5 times its size and weight . . . Actually delivers up to 250 amps at reduced duty cycle.

Simple to use, fully guaranteed, it operates on 110/220 volts AC, 50/60 cycles; handles electrodes from 3/64" to 5/32". Has adjustable arc voltage for different arc characteristics. Ideal for plant production and maintenance, for construction work, railroads, on the farm or home.

See your dealer or write direct for details of free trial offer!

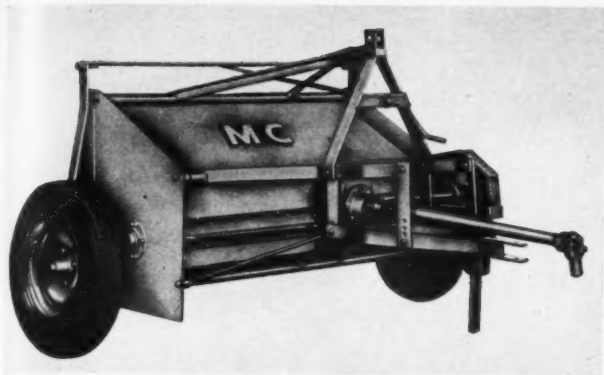
**24 hour delivery from stock!**

**KASSON DIE & MOTOR CORPORATION**

Integrity Since 1919  
32-14 NORTHERN BOULEVARD, LONG ISLAND CITY 1, N. Y.

CONTRACTORS AND ENGINEERS





Working on a new principle, the M-C mower can cut a 5-foot swath over hidden obstructions without frequent cleaning.

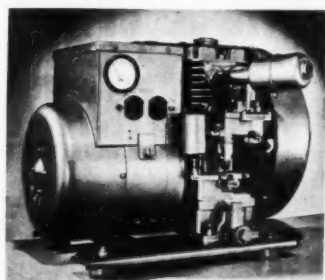
### Mower for Highway Use Requires Less Cleaning

■ Designed with 120 lightweight swinging knives, a new mower for highway use can cut over hidden rocks, tree branches, and other foreign objects without the need for frequent stops for cleaning. As the knives on the M-C mower cut, they also create a vacuum which picks up long

grass and leaves which are ground up by the swinging knives. It passes them through a series of friction bars and deposits a mulch on the ground.

For further information write to Mathews Co., Crystal Lake, Ill., or use the Request Card at page 18. Circle No. 481.

### Small Electric Plant for Continuous Use



This 83-pound Pioneer Gen-E-Motor generating plant offers an easily portable source of power.

■ A small generating plant weighing only 83 pounds and capable of continuous operation has been placed on the market by Pioneer Gen-E-Motor Corp., 5841 W. Dickens Ave., Chicago 39, Ill. Operating at a low speed of 1,800 rpm, the new plant has been designed for long use. The compact unit is only 22 x 18 x 18 inches in size.

Ratings for the Model PLA-4 are 450 watts ac and 200 watts dc at 115 volts ac and 7.5 volts dc. Power is provided by a Pioneer 2-hp four-cycle air-cooled engine.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 418.

### Back Fill Curbing and Trenches 5 TIMES FASTER!



MODEL 610  
POWER PACK  
HOPPER CONVEYOR

The Model 610 Hopper Conveyor backfills trenches and curbing up to 24" high with stone, cinders, sand, etc. in one-fifth the time required by previous methods. On the paving job shown above, 24" curbing was backfilled with crushed stone at a rate of 50 feet per minute.

Write today for information on this time-saving, cost-cutting unit for road widening and fill work. An actual demonstration can be arranged on your job.

DISTRIBUTOR FRANCHISE AVAILABLE IN SOME TERRITORIES

**POWER-PACK CONVEYOR CO.** 13910 ASPINWALL AVE.  
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MARCH, 1955



"Hey, you ain't Pete."

## The Fast Easy Way To Drill Concrete

*The New!*

**SYNTRON**



## ELECTRIC HAMMER DRILL

- Exclusive, Automatic Rotation of Drill Bit
- No Laborious Hand Turning of Drill Chuck
- Continuous Operation — Practically No Maintenance
- Ten Times Faster Than Hand Methods for Drilling

The Only Electric Hammer Drill available with automatic, self-rotating drill bit. Operates at high speed for fast, clean production drilling. Electromagnetic drive—only one moving internal part. Requires little or no service even after constant usage on toughest drilling jobs. Electric Hammer models for chipping, cutting, pointing, scaling, etc. also available.

### Other SYNTRON POWER TOOLS That Reduce Job Time and Costs

#### Gasoline Hammer PAVING BREAKERS and ROCK DRILLS

2000 blows per minute for digging, tamping, busting or drilling in paving, clay, shale, rock, etc. Bit rotates automatically for drilling.



#### Belt Driven ELECTRIC SAWS

Deliver full cutting power to blade—no bucking or jerking. For production cutting of wood, concrete block, plaster board, etc., 8" and 10" blades —2-13/16" and 3/4" cuts.



#### CONCRETE VIBRATORS

Gasoline or electromagnetic models for uniform compacting and settling on large mass or form concrete projects.



Write today for Complete Tool Catalogue—Free

**SYNTRON COMPANY**

227 Lexington Ave.

Homer City, Pa.



This Blaw-Knox Model 95 road widener recently averaged just above 2,200 feet a day laying a 2-foot-wide strip of concrete on each side of 2 7/10 miles of pavement on U. S. 15 in New York State. Using no road forms, it laid 8-inch-deep strips. For details write to Blaw-Knox Co., Farmers Bank Bldg., Pittsburgh, Pa., or use the Request Card at page 18. Circle No. 531.



A crane attachment with a forged steel hook is now available for all Michigan tractor shovels. Double-tilt cylinders change the crane-hook angle, independent of the boom-lift cylinders, under load. Boom lengths range from 3 to 4 1/2 feet and capacities from 4,000 to 7,500 pounds. For details write to Clark Equipment Co., Benton Harbor, Mich., or use the Request Card at page 18. Circle No. 534.

## NEW DIESEL LOADERS STAR POWERFLOW STEERING, PARALLEL-BUCKET CONTROL

Latest developments to increase capacity and reduce costs are available on MM Wheelers—the original industrial “work-type” loaders.

Owners that choose or require diesel power now obtain the benefit of UTIL-D utility in new diesel units. MM energy-cell controlled combustion results in prolonged cylinder pressure for lowest maintenance and steady torque that matches job demands.

Powerflow hydraulic booster is the MM answer to difficult steering conditions . . . it's an industrial type unit that increases oper-

ator efficiency . . . has control valve built into drag link for added safety.

To promote more effective loading action MM loaders have parallel bucket control. This maintains proper bucket angle for improved loading and prevention of spillage at all heights.

In addition to the many superior heavy-duty advantages new MM integrated weight-to-power balance improves traction.

Extra large safety factor of MM design prevents being short-changed on tough job performance.



**MINNEAPOLIS-MOLINE**  
MINNEAPOLIS 1, MINNESOTA

RTI-Wheeled Backhoe unit combines industrial prime mover with supreme speed and accuracy of hydraulic control and rugged construction for tough job conditions.



This RTI-50 Wheeler has new integral rear-end weight balance for bigger loading capacity. Short turning radius, ease of handling, large traction and flotation provide high mobility . . . fast work in close quarters.



A UTIL-175 loader is highly favored for big load capacity as the 1 1/2 yard bucket is located over large front drive wheels. Rears are regular 10.00-20 transport tires.



High lift, long reach, and plenty of low-cost diesel power make this Model UTIL-100 Wheeler-Loader unit a top performer. 6 speed shuttle gear makes short work of loading trucks.

### Baum and Harvey Elected New M-C&S Directors

Recently elected as directors of Merritt-Chapman & Scott Corp., New York, N. Y., were Rolland O. Baum and Robert E. Harvey. Mr. Baum, in charge of operations of the Milton Steel Products Division, Milton, Pa., since its acquisition by M-C&S late in 1953, has been a vice president of Merritt-Chapman & Scott for three years.

Mr. Harvey joined the Newport Steel Corp. as executive vice president and general manager last year, following its acquisition by M-C&S. The election of both men to the board fills two vacancies which resulted when the authorized membership was recently increased.

### P. L. Griffith Joins Walter Kidde, Inc., Staff

P. L. Griffith has joined the firm of Walter Kidde Constructors, Inc., engineering and building firm of New York, N. Y., and Houston, Texas, as director of industrial development. In

### HANDLES 1 1/2 TONS



WEIGHS ONLY 9 LBS. "The Lug-All, dollar for dollar, is probably the best tool used in our outfit. In a business of expensive tools and equipment, it is a real pleasure to get a man-sized working return for a boy-sized expenditure. Our Lug-All is kept constantly on the job and in the shop and has been put to a thousand different uses" states Mr. R. L., president of a prominent contracting firm.

It will pay you to investigate this unique winch-hoist. Here are some of its outstanding features:

**RUGGED FRAME**—fully protects the drum and ratchet teeth, yet permits easy cleaning of simple parts.

**REVERSIBLE HANDLE**—is “safety valve” handle that will bend if seriously overloaded.

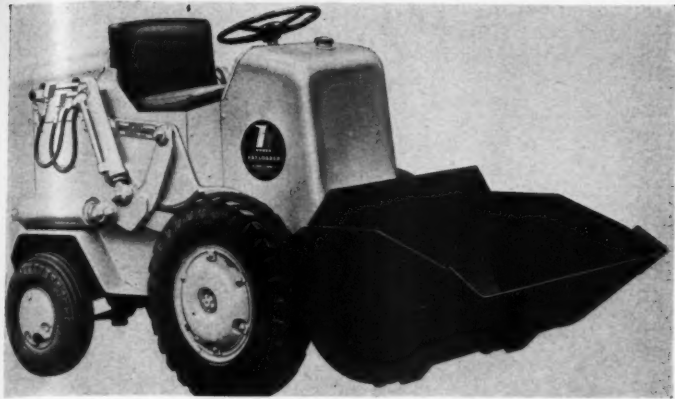
**VERSATILITY**—pull, lift, lower, stretch or tighten . . . at any angle!

**AIRCRAFT CABLE**—133 strand preformed and flexible, gives 5 ft. lift at 1 1/2 ton capacity, and 10 ft. double-speed lift at 3/4 ton. \$35.25

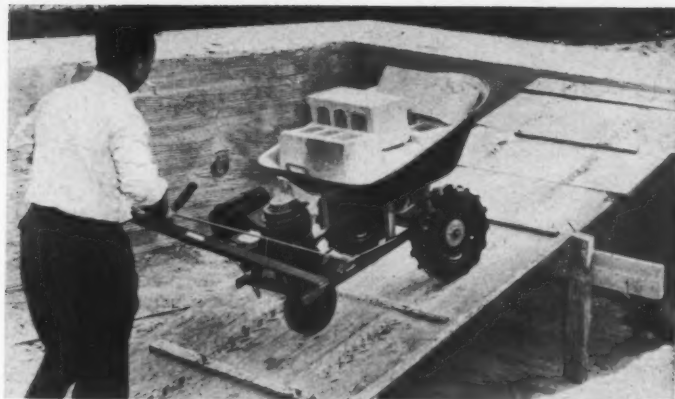
Order today, or write for literature on complete line of Lug-All Winch-Hoists and Car Door Pullers. The Lug-All Company, Haverford 2, Penna.

CONTRACTORS AND ENGINEERS





With a bucket 16 2/3 per cent larger than that of its predecessor, the new Model HA Payloader offers a payload of 18 cubic feet or struck load of 14 cubic feet. A new bucket-arm design gives exceptional break-out and 40 degrees of tip-back. For details write to Frank G. Hough Co., 822 Seventh St., Libertyville, Ill., or use the Request Card at page 18. Circle No. 535.



Powered by a 2 1/2-hp engine mounted on supports behind the tray, the new Worthington Workhorse motorized wheelbarrow can carry a 400-pound load up a 16-per cent grade. Throttle and clutch controls are on the handles. A rear caster wheel makes positioning easy. For details write to Worthington Mower Co., Stroudsburg, Pa., or use the Request Card at page 18. Circle No. 537.

this post, Mr. Griffith will handle new business activities in the engineering and construction field.

Formerly associated with Sander-son & Porter, an engineering firm of New York City, Mr. Griffith is a mem-ber of the American Society of Me-chanical Engineers.

#### Flood-Protection Booklet

The story of the reconstruction of flood-protection facilities in the Kansas City, Kans., and Kansas City, Mo., area is told pictorially in a new booklet from the Caterpillar Tractor Co., "When Construction Men Agree".

The booklet reviews the parts played by eight contractors in re-building the levees and filling toe trenches in the area stricken by the July, 1951, flood that did over \$460-million worth of damage. The \$15-million restoration of local levees and the continuing construction of reser-voirs at strategic locations on the Kansas River are also illustrated.

Copies of the booklet, Form No. D489, may be obtained from any Caterpillar dealer or from the Cater-pillar Tractor Co., Peoria, Ill.

#### TEMPORARY PORTABLE PIPE LINES . . . are easy to set up with MOULTON'S

patented Quick Coupler



lightweight

STEEL OR ALUMINUM PIPE!

Sizes 2" to 10". Carrying handles permit fast coupling and uncoupling. Flexible, pres-sure tight and easy to store. Write for FREE illustrated information.

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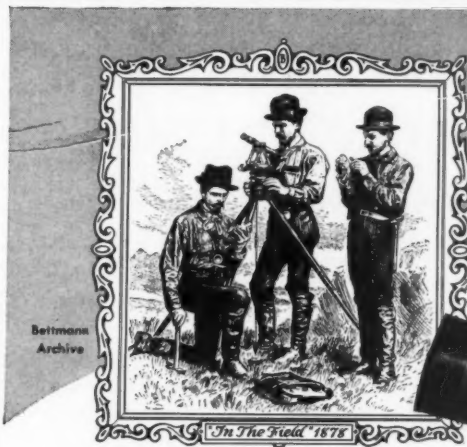
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MARCH, 1955



## Brunson's Patented Dustproof Ball Bearing Construction!

Since their origin, surveying instruments have been beset by three big troubles—dirt, wear, and re-pair! It took Brunson, with a radical departure from old, "conventional" basic designs, to come up with the answer—dustproof ball bearing construction!

Located in the spindle and telescope axis, Brunson ball bearings are permanently lubri-cated by an all-weather grease and sealed against dust and moisture. Bearings stay clean, and wear is practically eliminated by the smooth ball bearing action. Your Brunson instrument oper-ates efficiently under the most severe conditions of heat, dust, or moisture. It maintains lasting accuracy. You suffer no expense or loss of time for routine repair, cleaning, or lubrication.

You pay no more for Brunson instruments. You get much more. Mail coupon today. You'll be glad you did!



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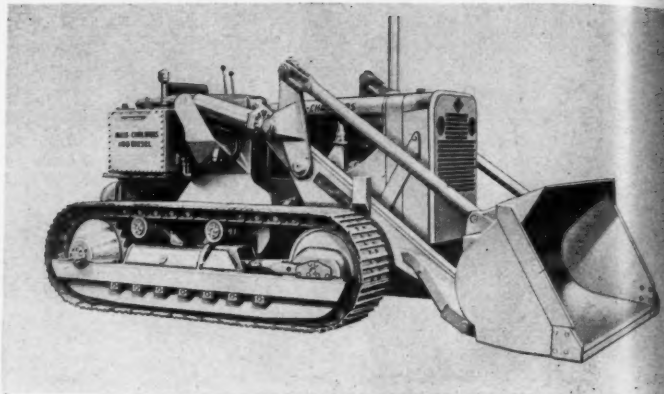
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Model 50  
Engineers Transit



A new Barnard & Leas lightweight elevating grader attachment is available for the Galion Model 503 motor grader. The new machine is recommended for such jobs as carting, loading, terracing, and ditch cleanout work. The unit folds for travel. For details write to Barnard & Leas Mfg. Co., 1200-34 12th St. S. W., Cedar Rapids, Iowa, or use the Request Card at page 18. Circle No. 532.



The improved 2-yard Allis-Chalmers Model HD-9G Tractor-Shovel draws on 100 net engine horsepower or 82 drawbar horsepower to develop 23,000 pounds push on the shovel. An optional 25-degree tip-back bucket, and an improved standard bucket are among features. For details write to Allis-Chalmers Mfg. Co., Milwaukee 1, Wis., or use the Request Card at page 18. Circle No. 538.



## CUT LOADING COSTS WITH FAST-RUGGED EIMCO'S

Yes! You cut costs when you use Eimcos for loading.

**NOTE** these advantages:—

**Advantage:** Eimcos dig and load materials that are difficult or impossible for other loading equipment.

**Reason:** Eimcos are designed for tough jobs — digging and loading rough, broken rock. Tracks are designed to oscillate freely even with the loader attachment. The bucket design permits digging in frozen stock piles, rough bottoms, heavy ores and in sticky clay or unbroken conglomerate.

**Advantage:** Eimcos are more maneuverable.

**Reason:** Eimcos use independent track control. Separate levers control each track and one track can be run forward while the other runs reverse.

**Advantage:** Eimcos last longer.

**Reason:** Torque converter drive is standard on Eimcos. All castings are alloy steel, all construction is extra heavy-duty.

**Advantage:** Eimcos load faster.

**Reason:** The overhead principle developed by Eimco is faster. Complete cycle is 10-12 seconds. Shifting from high to low on tractor or loader is done in motion. Shifting from forward to reverse can be done at full speed.

**Other Advantages Include:** Better visibility with the operator up front. Easier maintenance with clutches that never need adjustment and elimination of all clutches, brakes and gadgets in the final drive.

Let an Eimco engineer show you how you can cut loading costs on the next job.



Eimco 105 with bulldozer attachment



Eimco 105

### THE EIMCO CORPORATION

Salt Lake City, Utah—U.S.A. • Export Offices: Eimco Bldg., 83 South St., New York City  
New York, N. Y. Chicago, Ill. San Francisco, Calif. El Paso, Texas Birmingham, Ala.  
Duluth, Minn. Kellogg, Minn. London, Eng. Paris, France Milan, Italy



## Revisions to Manual On Traffic Control

Revisions to the "Manual on Uniform Traffic Control Devices", published in 1948 by the Bureau of Public Roads, are now available in a pamphlet issued by the Bureau. The revisions have been approved by the American Association of State Highway Officials, the Institute of Traffic Engineers, and the National Committee on Uniform Traffic Laws and Ordinances.

The changes are given in order, according to the numbered manual sections to which they apply, and are accompanied by comments explaining the revision and its specific application. The pages of the pamphlet are printed on only one side, as are the pages in the manual, so that the revisions may be pasted opposite the sections in the manual to which they apply. General sections treated are signs, markings, signals, and islands.

The pamphlet on revisions is available at 15 cents a copy, or may be purchased with the "Manual on Uniform Traffic Control Devices" for \$1. Either publication or both may be obtained by writing the Superintendent of Documents at the U. S. Government Printing Office, Washington 25, D. C.

## Reaves Is Vice President Of Turner Construction Co.

The Turner Construction Co., New York, N. Y., has elected George M. Reaves a vice president and placed him in charge of the firm's Boston office. Previously, Mr. Reaves was general manager of the Boston office. During his association with the Turner organization, Mr. Reaves has been in charge of a number of projects, including the New England Telephone & Telegraph building in Boston and the U. S. Steel-Mellon Bank building in Pittsburgh.

## C. A. Pitts Is Elected Member of M-C&S Board

Charles A. Pitts of Toronto, Canada, has been elected to the board of directors of Merritt-Chapman & Scott Corp., New York, N. Y. Mr. Pitts is president of the C. A. Pitts General Contractor, Ltd., a Canadian subsidiary of M-C & S. His election fills one of three vacancies on the board.

Starting in the construction field in

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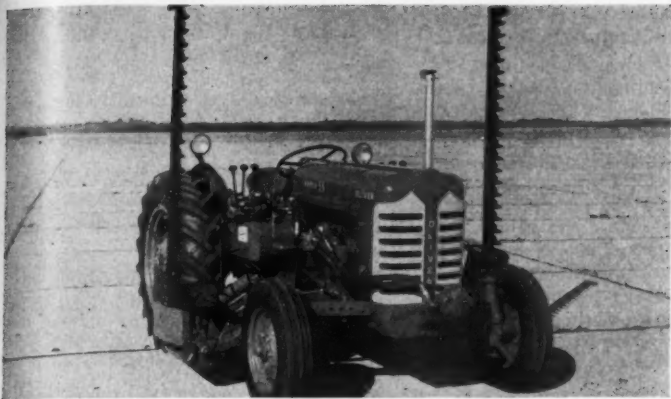
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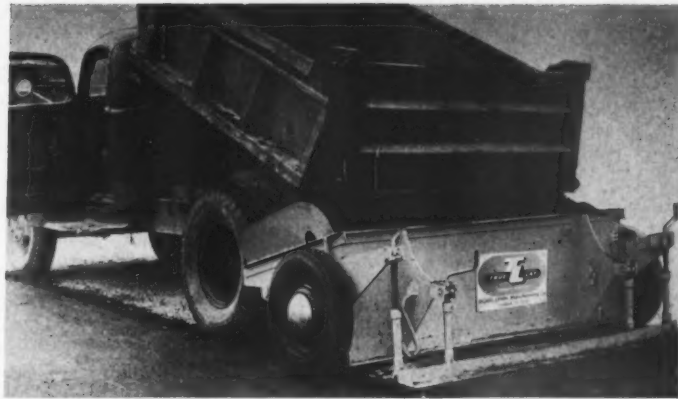
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MA





A serious traffic hazard faced by highway-maintenance crews has been reduced by the introduction of Anderson grass mowers that mount on the left-hand side of tractors. The new mowers work facing traffic so that the operator is able to see oncoming vehicles. For further details write to A. C. Anderson, Inc., Wildwood, N. J., or use the Request Card at page 18. Circle No. 536.



Adjustable flights maintain an even blend and flow of material on the Model 8A True-Lay paver. The standard 8-foot paver lays a mat 10 inches thick and to 10 feet wide with screed extensions. Either wheel may be raised to ride on the curb for close paving. For details write to Doug-Lynn Mfg. Co., 339 15th St., Oakland 12, Calif., or use the Request Card at page 18. Circle No. 533.

1930, Mr. Pitts has been active in industrial, marine, and heavy construction. After having served with his father's firm until 1942, he organized his own company, which recently worked with three other firms in the construction of Toronto's first subway system.

#### U. S. Corps of Engineers Changes Division Offices

To effect an estimated saving of \$270,000 annually and to distribute work more evenly throughout the North Central Division of the U. S. Army Corps of Engineers, consolidation of several district offices and realignment of boundaries within the division are being carried out.

Under the program, the areas and functions of the Milwaukee and Duluth District Offices will be reassigned to the Chicago, Detroit, and St. Paul District Offices. Area offices will be maintained in Milwaukee and Duluth.

The Chicago District will now be responsible for the civil works area of the Milwaukee District in Wisconsin, the upper Michigan peninsula, and all military construction in Wisconsin. The remaining civil works area of the Milwaukee District and a portion of the Duluth District will be handled by the Detroit District Office. With the exception of the area handled by the Detroit District Office, the civil works area of the Duluth District will be handled by the St. Paul District. The entire program, which began approximately one month ago, is expected to be completed by early May.

#### Yours

#### For the Asking

Further information or descriptive literature can be secured from any advertisers in this issue of **CONTRACTORS AND ENGINEERS**. Just write name of manufacturer and product of interest to you on the extra line provided on post card facing page 18, fill in your own name and connection, mail to us and we'll do the rest.

#### CONTRACTORS AND ENGINEERS

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# MADSEN ASPHALT PLANT



The outstanding MADSEN Model 481 Asphalt Plant

### Check These Madsen Advantages

- New MADSEN Model 440 Twin-Shaft Pug Mill Mixer (Patent Pending). Has improved mixing action, faster discharge, built-in oversize capacity and precision-ground, externally removable sectional liners.
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- Safety equipment in the form of larger operating platforms and complete stairway and caged ladderway structures... all unit-built for ease of handling and assembly.
- Fingertip control of weighing and mixing levers centrally located for maximum efficiency.
- Unit construction designed for easy stacking in factory-matched unit sections, factory-fitted for quick field erection.
- In-built reserve capacity. You can purchase the MADSEN Model 481 as a 4000-lb. capacity unit and with only minor modification costs, increase it to a 5000-lb. or 6000-lb. plant as the years go by.

**MADSEN**  
ASPHALT PLANTS and  
ASPHALT PLANT EQUIPMENT



Construction Equipment Division

Manufactured by

**MADSEN IRON WORKS, INC.**

Subsidiary of Baldwin-Lima-Hamilton Corporation  
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LA MIRADA, CALIF., U. S. A.



Automatic throttle control delivers power as needed on the Hydro-King fluid hoist for materials towers.

**"We know all our loads will travel safely since we use only LeBus Load Binders. They are superior in every way."**

**PERCY JONES, Inc.**  
OKLAHOMA CITY, OKLA.



**LEBUS**  
**LEBUS ROTARY TOOL WORKS, Inc.**  
Phone Plaza 9-2771

P. O. BOX 2352 • LONGVIEW, TEXAS

#### **Tower Hoist Operates Without Clutches, Brakes**

■ A new hoist for materials towers, announced by King Mfg. Corp., 3146 W. Chicago Ave., Chicago 22, Ill., has no clutches or brakes. As a result, little maintenance and lubrication are necessary to keep the automatic fluid hoist in working order. A Wisconsin air-cooled gasoline engine powers the unit. The hoist has a built-in oil tank.

One man operates the hoist from above or below by pulling a manila rope. The machine is stopped automatically by preset cable clamps. Automatic throttle control delivers power as needed.

The Hydro-King hoist is made in two sizes for 1,000 and 2,500-pound towers. It will operate single or double-well towers. A trailer mounting is available for quick transport.

For further information write to the company, or use the Request Card at page 18. Circle No. 478.

#### **Selection Guide Offered On Aluminum Products**

■ A booklet on aluminum products made by the Reynolds Metals Co., is available on request. The literature contains a complete wrought-aluminum-alloy selection guide which outlines general properties of aluminum sheet, plate, wire, rod, bar, tubing, pipe, and extruded and structural shapes. A cast-alloy selection guide is also included.

The various methods of fabricating and finishing aluminum are briefly explained, and a section is devoted to the styling and engineering services offered by the concern.

To obtain this literature write to Reynolds Metals Co., 2500 S. Third St., Louisville, Ky., or use the Request Card at page 18. Circle No. 548.

#### **Excavator-Crane Mounts On Crawler Tractors**

■ A brochure describing the Hyster Hystaway excavator-crane that mounts on Caterpillar D6, D7, and D8 track-type tractors is now available. The booklet explains the advantages of these tractors equipped with a dozer blade and the Hystaway. The attachment can be quickly converted to either shovel, backhoe, dragline, crane, clamshell, or pile driver.

The excavator-crane is shown in use for pipeline trenching, sewer jobs irrigation ditches, pile driving, chan-

nel dredging, power-line construction, and railway maintenance. Specifications are included.

To obtain Form No. 1235 write to the Hyster Co., 2902 N. E. Clackamas St., Portland 8, Oreg., or use the Request Card at page 18. Circle No. 550.

#### **Heil Names Representative**

Maurice Hanley has been appointed district sales representative of the Kansas City, Mo., district office for The Heil Co., Milwaukee, Wis. He will service Heil equipment in Iowa, Nebraska, Kansas, and Missouri.



Permite N-Tair has greater air entraining potency . . . therefore is more effective, more economical, than similar products.

Permite N-Tair is a complete and homogeneous solution, guaranteed not to segregate, settle out, become gummy, or lose efficiency during storage. It is not corrosive; does not react with components of concrete.

Permite N-Tair does not increase in viscosity appreciably with a decrease in temperature until the freezing point is reached. This freezing point occurs at approximately 28° F. Freezing does not affect the air entraining efficiency of Permite N-Tair. After thawing, it may be

successfully used as before freezing.

A double strength solution designated as Permite N-Tair D.S. can also be supplied. In the event that the use of N-Tair D.S. is permitted, it will be more economical to use. Only ¼ to ½ ounce per bag of cement would be required, compared to ¾ to 1 ounce per bag of cement with the normal strength Permite N-Tair solution.

Permite N-Tair is a clear amber, low viscosity liquid, consisting basically of a solution of sodium resinate produced from the hydrocarbon extract of pine wood, from which the bulk of the petroleum naphtha soluble resin acids has been removed.

Permite N-Tair is accepted as an approved material by ASTM, Bureau of Public Roads, Corps of Engineers, and all other Federal and State departments. It complies with all of the following specifications:

1. CRD-C-13-49
2. ASTM-C-175-48T, C260-50T
3. Federal Specification SS-C-192
4. AASHTO M-134
5. All Existing State Specifications

Available in 5-gal. pails and 30 and 53-gal. drums through your nearby Permite Distributor. Write for new descriptive bulletin and full information.

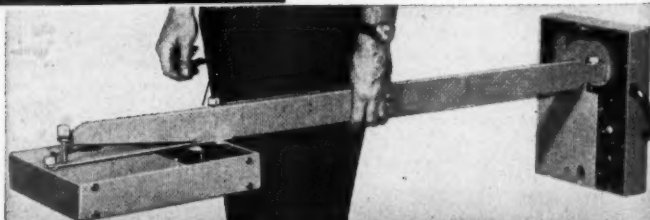
Permite N-Tair is made by the manufacturers of Permite Concrete Curing Compounds PW-40 (White) and W-95 (Clear).

**ALUMINUM INDUSTRIES, INC., CINCINNATI 25, OHIO**

#### **WILKINSON LINE LOCATOR**

##### **REDUCES COST**

1. Spots all pipe and cable locations before uncovering.
2. Indicates depth, too.
3. Leading utilities everywhere use it to reduce job costs.



#### **WILKINSON PRODUCTS COMPANY**

3987 Chevy Chase Drive — Pasadena 3, California — SYLvan 0-4314

CONTRACTORS AND ENGINEERS





Hydraulically controlled, the new Shawnee roller brings much of the tractor's weight to bear to increase compaction effort.

### New Compaction Roller Mounts Behind Tractors

■ A compaction roller that mounts behind many popular makes of tractors is announced by the Shawnee Mfg. Co., 1947 N. Topeka Ave., Topeka, Kans. The roller supplies 90 psi

of compaction, and more weight can be obtained by the addition of water. The rear-mounted roller is raised hydraulically. Down pressure is sufficient to raise the rear wheels of the

tractor so that the combined weight of the roller and the back end of the tractor can be used for compaction. When the rear wheels of the tractor are raised and the roller is in operating position, the roller is driven by a reversible hydraulic motor.

For transport, the roller can be raised hydraulically by a valve near the operator's position.

For further information write to the company, or use the Request Card at page 18. Circle No. 458.

### Light Aluminum Lutes

■ Literature from Hy-Way Heat Systems, Inc., Box 2494, Youngstown 9, Ohio, shows a lightweight lute with a 30-inch aluminum blade. The Hy-Way lute is illustrated leveling black-top and doing contour shaping.

The tool weighs four pounds and has a 66-inch-long handle set in a die-cast socket.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 552.

### Hyster Service Manager

The new service manager for the Western Division of the Hyster Co., Portland, Oreg., is James R. Leep. He will coordinate Hyster parts and servicing procedures with 11 western Hyster dealer organizations and 45 Caterpillar-Hyster organizations. He will also continue his duties as Western Division parts manager.

### Aeroquip Subsidiary Formed in Canada

Aeroquip Corp., Jackson, Mich., has organized a Canadian subsidiary, Preco-Aeroquip, Ltd., Toronto, to give better service to Canadian customers.

The new firm, which has acquired the assets of Preco Progress & Engineering Corp. of Toronto, will occupy the offices of the latter organization temporarily. Preco Progress & Engineering formerly was licensed to manufacture the line of Aeroquip products in Canada.

### Facts on Diversified Line Of Construction Machines

■ The essential facts about the equipment it produces for the construction industry are presented by the Harnischfeger Corp. in a new booklet. Equipment covered in the bulletin includes truck cranes, power shovels, electric shovels, soil stabilizers, and diesel engines. Also included are overhead cranes, electric and chain hoists, arc welders, welding electrodes, and welding positioners.

The literature contains a map showing locations of P&H plants, branches, warehouses, parts depots, sales offices, and dealers.

To obtain Bulletin G-15 write to Harnischfeger Corp., 4616 W. National Ave., Milwaukee 46, Wis., or use the Request Card that is bound in at page 18. Circle No. 549.

## JERSEY SPREADER

on another Major Project!



OHIO  
TURNPIKE

With the overload of material shown above, this Jersey Spreader made a smooth, even spread—without hand work or delay—on an Ohio Turnpike Contract. Capacity to lay up to 5,000 tons of base daily has made Jersey Spreaders preferred equipment on big paving contracts.

Write now for complete information and illustrated literature.

### TRACTOR SPREADER COMPANY

MANUFACTURERS OF THE JERSEY SPREADER

HASBROUCK HEIGHTS, NEW JERSEY



## 2-WAY LITTLEFORD ROAD BROOMS

with exclusive Hydraulic Lift for adjusting brush tension

Sweeps right or left. Change from one position to another in less than 30 seconds!

The Hydraulic Lift—exclusive with Littleford—raises, lowers and supports the brush so that its full weight does not rest on road surface. Materially reduces brush wear.

Littleford Road Brooms made in many different types and models. Sprinkler and blower attachments available. For complete information, write for bulletin 19.



**LITTLEFORD**

LITTLEFORD BROS., INC.  
485 E. Pearl St., Cincinnati 2, Ohio



Drilling Tools  
FOR CONSTRUCTION  
and GEOPHYSICAL  
CONTRACTORS

## AUGERS HEADS BITS

ADAPTABLE TO  
ALL MAKES OF

HORIZONTAL  
& VERTICAL  
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DRILLS

Drill holes 2" to 12"  
diameter

Depths to 300'

Drill Wells, shot holes,  
under streets or high-  
ways; thru earth, sand-  
stone, limestone or  
shale in hours, not days

Advise us your problem  
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**CENTRAL MINE  
EQUIPMENT COMPANY**

6200 N. Broadway  
St. Louis, Missouri



Material excavated by a Bucyrus-Erie 54-B crane, center, is brought by end-dump Euclids to the Caterpillar D8 tractor and dozer, lower left, where it is used to build up the lower dike. C&E Staff Photo



Working close to the 10th Avenue bridge in Minneapolis, a Bucyrus-Erie 54-B with drag-line excavates for the lock wall, loading the material into an end-dump Euclid. C&E Staff Photo



## Lock and dam project aids river navigation

Concrete work is virtually completed and gates and bridge machinery only remain to be installed on the \$25 million lower lock and dam project at St. Anthony Falls, the limit of navigation of the Mississippi River in Minnesota. The locks, located in the heart of Minneapolis, will lift river boats 74 feet over the falls and will permit river traffic to go an additional 4.6 miles above present limits, providing water transportation for the city's entire industrial area.

Eventually, the project will include an upper lock through an existing dam, dredging of channels between the locks and above the upper lock, and alteration of existing bridges and facilities.

Construction of the lower lock and dam is being done by Johnson-Kiewit Construction Co., a joint-venture firm composed of Al Johnson Construction Co. Minneapolis, Minn., and Peter Kiewit Sons' Co., Omaha, Nebr. The project was planned and is being supervised by the St. Paul

A variety of work goes on in close quarters as a Layne vertical turbine pump is set, left; sheet piling is driven with a Bucyrus-Erie crane and a McKiernan-Terry 983 hammer; and a Euclid is loaded by another unit, center. Girders salvaged during the removal of the railroad bridge, top, were used in a work bridge linking both sides of the river.

## BUILD BASEMENTS Faster — Better — Cheaper

WITH

## ROCFORM SYSTEMS



Save 50% on normal labor cost, 10 MAN HOURS to form an average basement — eliminates all costly waste of forming lumber and the expensive handling of ordinary fillers.

*Rocform* corporation  
CONCRETE FORMING ENGINEERS  
Offices in principal cities

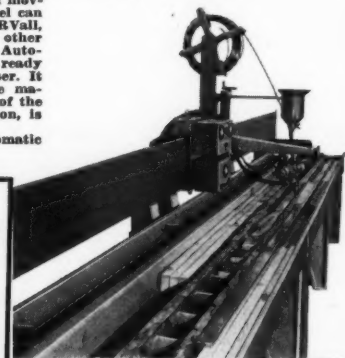
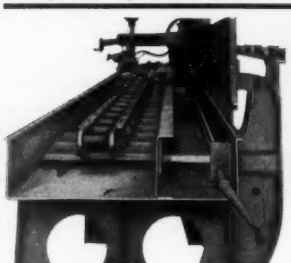
Home Office & Factory — 15160 W. 8 Mile Rd., Detroit 35, Michigan

A limited number of licenses still available. Write for details.

## TRACK RE-SURFACING, fast and at low cost with a BERKELEY ConSERVall

The tracks of any current model earth moving machine or crawler mounted shovel can be re-surfaced with a Berkeley ConSERVall, faster and at lower cost than by any other method. ConSERVall is a complete Automatic Welder and Re-surfacing Unit, ready for operation when it reaches the user. It handles the track as taken from the machine; no dis-assembly, or relocation of the track during the re-surfacing operation, is necessary.

ConSERVall is simple and fully automatic in operation. No skilled operator is required; anyone can become



expert with a few hours instruction. It is widely used by equipment owners and dealers.

With the addition of the Berkeley Rotator, and an extension to the Carriage Rail, idlers, rollers, sheaves, and other circular work can be re-surfaced.

Write for illustrated circulars, complete specifications, and prices.



**PENN TOOL & MACHINE CO.**

Danville, Illinois

Builders of production welding machines, jigs and fixtures  
An Affiliate of Berkeley Equipment Company



### Three wellpoint systems keep excavation dry; work progresses despite record flood and ice jam

District of the U. S. Army Corps of Engineers. Construction, scheduled for completion this year, started in 1950 under a \$5,508,968 contract. However, the final cost is expected to be higher, because of plan changes and additional concrete required when a soft unsatisfactory sand rock was met in footing excavations.

The lower dam, a gravity-type concrete structure, abuts the existing power plant of the St. Anthony Water Power Co. on the left bank and ties into a sand rock bluff on the right bank. The structure contains four gate bays, each 56 feet wide, equipped

with tainter gates.

The lower lock, 56 feet wide and 600 feet long, lies parallel to and near the right bank. It provides a lift of 25 feet from the lower pool to the intermediate pool. The upper lock will be constructed through an existing dam. It will be of the same dimensions as the lower lock, but will have a 49-foot lift. All facilities are designed for a 9-foot navigation channel varying in width from 100 to 500 feet. The dredging of this channel up to the lower lock has been done under a separate contract.

(Continued on next page)



Working under a separate contract, the dredge Tipperary Boy dredges the 9-foot-deep navigation channel to the lower lock, and deposits material in bottom-dump scows. Exploratory test holes are made, foreground, by a Layne-Western drill rig.

measures and cuts sod to exact length  
**AUTOMATICALLY!**

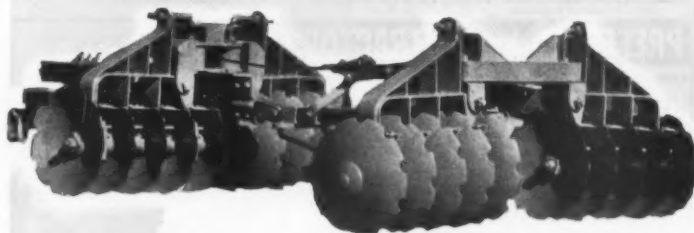
The **NEW RYAN** Auto-Cut-Off Model  
**POWER SOD CUTTER**  
cuts 15 sq. yds. of sod per minute  
(and cross cuts in the same operation!)

Here is, beyond doubt, the finest sod cutter ever built. The new Auto-Cut-Off model completely eliminates hand cross-cutting, gives you better quality sod with precision, square-cut ends for easier laying—greater profits. Easily cuts 15 sq. yds. a minute. Available in several sizes. For complete information, write Dept. K-1.

**Ryan landscaping**  
Quality Built  
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871 Edgerton St.  
St. Paul 1, Minn.

## For Real **HEAVY WORK** it's the **AMCO Brushmaster**

### PLOWING DISC HARROW



### for INDUSTRY . . . . for CONSTRUCTION

Here is the answer to your mixing, compacting and land clearing problem. This big plowing tandem does the job wherever heavy discing and brush clearing work is required. Rugged specifications are built into every part of this machine, giving you the same dependable performance that thousands of owners have come to expect of Alexander machinery. For double duty the rear unit of the machine is detachable leaving the front unit as a bush and bog.

#### S P E C I F I C A T I O N S

| Model Number | Sections | Disc Size | Number of discs | Width of cut | Weight |
|--------------|----------|-----------|-----------------|--------------|--------|
| 17-700       | Single   | 26"       | 10              | 8 1/2'       | 2800   |
| 17-701       | Tandem   | 26"       | 20              | 10'          | 5340   |
| 18-700       | Single   | 28"       | 10              | 8 1/2'       | 2850   |
| 18-701       | Tandem   | 28"       | 20              | 10'          | 5425   |
| 17-702       | Single   | 26"       | 8               | 7'           | 2450   |
| 17-703       | Tandem   | 26"       | 16              | 8 1/2'       | 4850   |
| 18-702       | Single   | 28"       | 8               | 7'           | 2495   |
| 18-703       | Tandem   | 28"       | 16              | 8 1/2'       | 4975   |

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## U. S. DEFENSE BONDS

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(Continued from preceding page)

Johnson-Kiewit had just started the job of breaking the navigational barrier the falls presented when a huge ice jam choked the river and suspended work for three months. In the deep gorge below the falls, the river filled with ice until it created

a dam. As the water rose, ice floes grew higher and scattered boats, docks, and other obstructions along both banks.

No sooner had ice receded and work started on a good operating basis when the river rose to the highest flood levels ever recorded in the area. Cofferdams were overtopped,

machinery was inundated, and work came to a sudden halt. Months later, when the flood waters had gone down and construction areas were pumped out, the job slowly got under way again. But the flood had also scoured out a huge area of sand rock from the right bank, requiring a substantial modification in the plans to overcome the effect of the scour.

Building cofferdams which could resist the fury of the river as it tumbles over the falls was the first construction problem encountered on the job. Keeping the excavations dewatered proved to be a continuing chore, for water runs in through the porous sand rock almost as fast as it can be pumped out. The main cofferdams adjacent to the river channel consist of a series of circular sheet-pile cells, 32 feet in diameter, filled with rock and other material from the excavation. The MP-112 sheets were driven about 20 feet to rock with a 9B3 McKiernan-Terry hammer aided by a water jet from a Byron-Jackson 3-stage jetting pump powered by a Gray Marine engine.

The first cofferdam built enclosed an area adjacent to the left bank. As the area was dewatered by a battery of pumps, the excavation was carried down by a number of machines including two Bucyrus-Erie 54-B cranes and a Northwest 80-D. End-dump Euclids hauled some of the material out of the excavation and placed it around the exterior of the cofferdam. Cranes with clamshell buckets and draglines cast the rest of the material. As the excavation deepened, it became apparent that the amount of water seeping through the sand rock on the land side of the excavation was too great to be pumped. To cut off the seepage, the contractor drove a line of 50 and 40-foot steel piling into the sandrock. Layne deep-well turbine pumps were installed in special wells to augment the portable pumps, and the excavation was completed.

Within this cofferdam, the new dam adjacent to the existing powerhouse of the St. Anthony Water Power Co.

was constructed. Also included in this construction were the first two piers for the gated section of the dam. With this much of the work complete, the cofferdam was removed. As water flowed through this area, a large cofferdam was built adjacent to the right bank for the construction of the lock. This cofferdam was built in the same manner as the first, except that enough of the piling in the cells was either driven down or cut off so that a road could be located along the top of the cofferdam. The cutoff dike at the lower end of this area was built of material excavated from the cofferdam, hauled in end-dump Euclids, and shaped and compacted with a Caterpillar D8 tractor and dozer.

#### Three Systems of Wellpoints

Inside this cofferdam, 40-foot sheet piling was again driven deep into the sand rock to cut off the infiltration of water. Three separate systems of Stang wellpoints were installed around the edges of the excavation. The 1½-inch risers with the 3-inch wellpoints were spaced 3 feet apart and connected to 6-inch headers. Each system, equipped with two 8-inch pumps powered by gasoline engines, had auxiliary pumps for standby service. After 8-inch holes had been jetted about 17 feet into the sand rock, the wellpoints were then set in the holes and surrounded with coarse filter sand to prevent them from being plugged by fine sand-rock particles. Most of the points produced from 2½ to 3 gpm, giving each system a total of from 600 to 700 gpm.

When the excavation in this area had been carried to grade, it was found that the riverbed was unsatisfactory for foundation material, and the excavation was deepened until sound sand rock was reached. Approximately 12,500 cubic yards of backfill concrete and sand was placed in this area in individual pours which ranged from 100 to 1,600 cubic yards.

Since Johnson-Kiewit's concrete plant, yard, and offices were located on the left bank of the river, a bridge

## PREFERRED by CONTRACTORS

Less initial cost — Lower upkeep

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## GET THE ANSWERS!

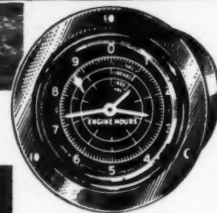
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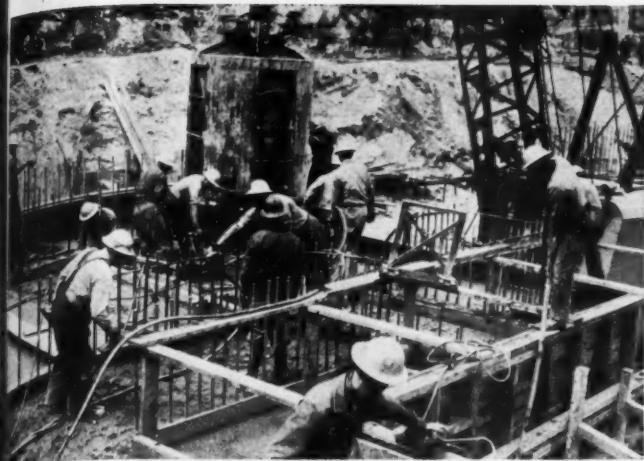
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CONTRACTORS AND ENGINEERS





Concrete for one of the structures is placed with 2-yard Gar-Bro air-operated buckets while Viber electric vibrators consolidate the mix. Concrete placement operations averaged 750 yards daily.

was built to connect the yard and the lock site on the right bank. This permitted cranes and other heavy equipment to cross to the work site. This bridge utilized 54-inch plate girders, salvaged from an old railroad bridge which had been removed from the area early in the project. Sheet pile cells 21 feet in diameter were set in the river for piers and filled with rock and sand. Between these piers the plate girders were placed to make up the four 68½-foot spans. The girders, spaced 6 feet 8 inches apart, were decked with 8x14 timbers. Three inches of oak planking over the timbers provided a wearing surface which stood up very well under heavy use during the remainder of the job.

#### Concrete Production

More than 90,000 cubic yards of concrete was included in the lower lock and dam, practically all which is mass concrete in the structures or backfill. This concrete was produced in a C. S. Johnson plant set up on the left bank. Aggregates graded from 3-inch down were supplied by Industrial Aggregate Co., Minneapolis, and

delivered to the stockpiles by truck. An American crane with clamshell bucket fed aggregates from the stockpiles to a 5-yard hopper mounted on rails over the loading section of belt conveyor. This 73-foot section fed the material to a 298-foot-long inclined conveyor which led to a pivoted distributor at the top of the plant 85 feet above the ground. Here the various sizes were distributed to the five bins of the plant.

Lehigh cement from the plant at Oglesby, Ill., was unloaded from bulk cars at the job siding and delivered to the plant in covered dump trucks. A storage silo held 3,200 barrels of cement, and the day storage bin above the batcher, 200 barrels. Concrete, mixed in two Koehring 2-yard tilting mixers, was discharged into a 2-yard hopper. International L-190 trucks carrying two Gar-Bro 2-yard bottom-dump buckets transported the mix from the plant to the location of the pour.

Contained in a typical 2-yard batch of the mass concrete were the following quantities:

(Concluded on next page)

## NEW "EDG-SUPPORT" frames



for MILLER  
Model "B" Tilt-Top

Now more than ever, Miller Tilt-Tops are built to take it—built to last! As any contractor knows, heavy crawler tractors concentrate the load along the edge of trailer platforms imposing heavy strains on the overhang section. The NEW Miller frames offset such strains with new, taper formed extension members. Integrally welded to the main side channels, these members extend the full capacity of the main channels out under the entire edge of the platform.

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hydraulic tilt control, 2 speed hand  
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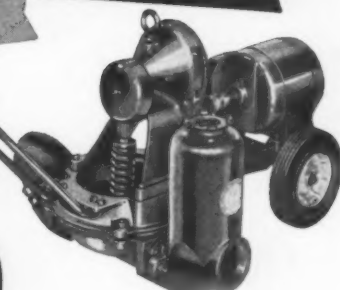
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**GORMAN-RUPP** Firsts — among all other diaphragm pumps of like size and type.

- Diaphragm drive rod spring-cushioned on down stroke. Runs smoothly. Increases diaphragm life 10 Times.
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See this pump at work on the job, through your Gorman-Rupp distributor. It is absolutely guaranteed to outperform and outlast any 3 in. single diaphragm pump comparably powered now on the market.

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#### NOTES FROM THE FIELD - -

Bridging Kokosing River on U. S. Route 36 at Mount Vernon, O. Model 3D-E1½ diaphragm pump and model 3362-B contractors' pump, both electric powered, and model 3205 contractors' pump engine powered - On The Job.

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**NOW!** BUY used equipment  
SELL used equipment  
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through **The Trading Post Section of  
CONTRACTORS & ENGINEERS**

470 4th Avenue, New York 16, N. Y.

See page 135

(Continued from preceding page)

|                      |           |       |        |
|----------------------|-----------|-------|--------|
| Aggregate            | ( 3-inch) | 2,514 | pounds |
| Aggregate            | (1½-inch) | 1,842 | pounds |
| Aggregate            | (¾-inch)  | 1,228 | pounds |
| Sand                 |           | 1,566 | pounds |
| Fine sand            |           | 218   | pounds |
| Cement               |           | 770   | pounds |
| Water                |           | 229   | pounds |
| Air-entraining agent |           | 18    | ounces |

This mix regularly produced concrete with a slump of 1 to 1½ inches and an air content close to 4½ per cent. Average strength of 28-day cylinders was in excess of 5,000 psi. A good day's pour with this setup was about 750 cubic yards. The maximum for a week was 2,500 yards.

Forms were prefabricated in a well-equipped shop, transported to the job on flat-bed trucks, and set in place by one of the cranes. Most form

panels were made of 2×6 tongue-and-groove sheathing on 3×6 studs. Wales consisted of double 7-inch steel channels tied at 8-foot intervals with 1-inch Superior tie rods. Reinforcing steel was tied in place in the forms.

Several cranes, including two Bucyrus-Erie 54-B units, a Northwest 80-D, and a Manitowoc 3500, assisted in swinging the 2-yard concrete buckets from the trucks to the forms. Concrete was consolidated in the forms by Viber electric vibrators. In order to leave a clean rough finish for effective bond, the surface of each lift was sprayed with a high-pressure air-water jet from a hydro-silica water-cutting machine. This was done at the final setting stage, usually 2 to 3 hours after the pour. Air for this and other purposes was supplied by a battery of Ingersoll-Rand 500 and 600-cfm Gyro-Flo compressors.

Since some of the concrete was placed during the winter months, an enclosure was built over a 170×34-foot area and heated with four 250,000-Btu Scheu heater. Heated concrete placed in the forms was kept warm for a minimum of 14 days while it was water cured. Vertical wall forms were removed after 48 hours so that succeeding lifts could be formed. The 4,800 cubic yards of concrete in the structure was placed in 8 to 10-foot lifts containing 200 to 250 cubic yards.

#### Personnel

Project manager for Johnson-Kiewit is A. E. Foote. He is assisted by H. L. Mundy, Jr., project engineer, and Lowell Goodman, construction engineer. C. W. Buending is resident engineer on the project for the U. S. Army Corps of Engineers; Emil Silverman is project engineer. The work is under the direction of the St. Paul District of the Corps, of which Col. O. V. Rohde is district engineer.

THE END

## Tool Punches Holes Through Structural Steel

■ Actuated by a blank cartridge, a Velocity-Power tool on the market punches holes through mild-steel plate and through the flange of various types of structural-steel members. The tool can be used on I-beams, angles, channels, columns, and



The Velocity-Power tool in operation.

## Booklet on Test Services Of Consulting Engineers

■ A new booklet describes laboratory, field, and consultation services offered by Testing Service Corp., 710 N. Brookfield, South Bend 28, Ind. The literature states that the concern assists consulting engineers throughout the country in the analysis of design and construction of large structures and projects such as turnpikes, bridges, dams, airports, and industrial buildings.

The services, which comprise both laboratory testing and field inspection, employ geophysics, aerial photography interpretation, petrographic microscopy, microchemistry, and other scientific methods.

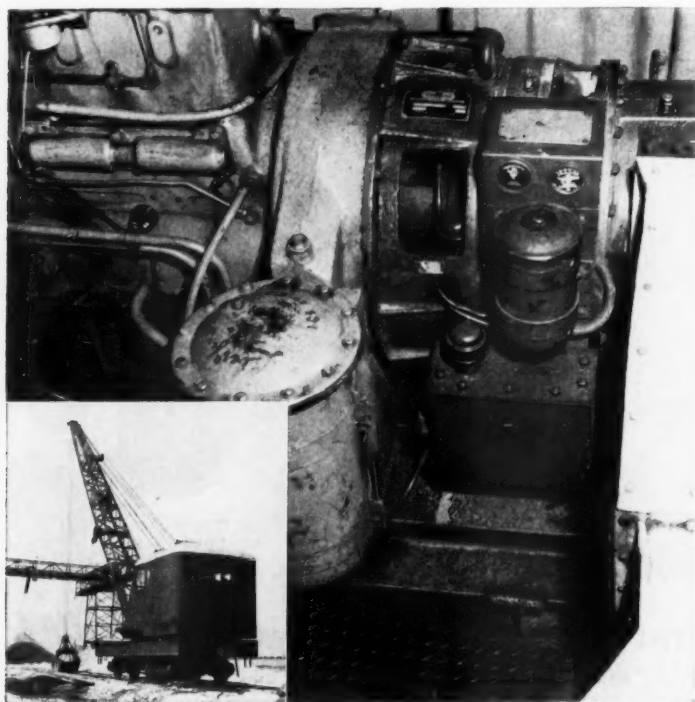
To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 553.

other structural shapes having a tensile strength up to 60,000 psi.

The punch, a development of the Velocity-Power Tool Co., 201 N. Braddock Ave., Pittsburgh 8, Pa., operates on gas pressure resulting from the discharge of a blank cartridge. A blow on the firing head from a small hand-operated firing hammer discharges the cartridge.

The manufacturer reports that it is possible to punch 30 to 40 holes an hour with the tool without undue effort on the part of the operator. The tool is made from corrosion-resisting alloy steel for use on outside work in all kinds of weather.

For further information write to the company, or use the Request Card at page 18. Circle No. 521.



Model F Torque Converter behind Cummins HBI-600 powering "Green Hornet" at Missouri, Illinois Material Co., one of leading aggregates producers in St. Louis area. Twin Disc Torque Converters are provided in 3 types, with capacities up to 650 hp.

## Diesel power with torque converter cuts fuel costs 50% on "Green Hornet"

With an old locomotive crane affectionately dubbed the "Green Hornet", Missouri, Illinois Material Co. of St. Louis is realizing drastic savings, outstanding performance . . . from a Cummins Diesel conversion unit working through a Twin Disc Torque Converter.

With a 1½-yard bucket, the crane is loading 300 tons of sand an hour on 2½ to 3 gallons of fuel . . . averaging less than half the fuel costs per day than with coal. And on boiler-cleaning alone, the conversion unit is saving \$676 a year on labor.

Through the powerful and infinitely-variable torque multiplication of the Twin Disc 3-Stage Torque Converter, the "Green Hornet" is throttle-controlled. No clutch is used. The only governor is for over-speed. Gross overall reduction is 3.75:1. With a

line speed of 168.75 fpm, the crane pulls 21,334 pounds. The owner reports "a swift but soft power build-up during acceleration with no lugging or vibration, and no cable-whipping or bucket-swinging during deceleration. And it's convenient. For emergency orders, we just punch the button and go."

Such performance and savings facts are similar to hundreds of power unit conversions with Twin Disc Torque Converters. See your engine dealer.



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With Lt. Gen. Eugene Reybold (center), ARBA executive vice president, are Hal G. Sours (left) and H. A. Radzikowski. Standing (left to right) are S. Howard Brown, A. T. Goldbeck, and Frederick Salditt.

### ARBA Task Force Makes Road-Building Study

The report on the highway industry's capacity to carry out President Eisenhower's proposed \$101 billion road-building program, presented at the 53rd annual convention of the American Road Builders' Association in New Orleans in January, was the result of a group effort by a number of ARBA members.

Hal G. Sours, consulting engineer of Columbus, Ohio, and former ARBA president, is chairman of the Task Force committee on planning and design. H. A. Radzikowski, of the U. S. Bureau of Public Roads, served as liaison engineer for the study and S. Howard Brown, of Brown, Davis, & White, Grantville, Pa., as chairman of the Task Force on construction. Chairman of the Task Force on materials and supplies is A. T. Goldbeck, engineer-director, National Crushed Stone Association, Washington, D. C. Frederick Salditt, vice president of the Harnischfeger Corp., Milwaukee, Wis., is chairman of the committee on construction machinery and equipment.

### New Adams Film Shows TraveLoader at Work

A 15-minute sound-color film which shows the Adams TraveLoader working on a wide variety of jobs has been issued by the Adams Division of LeTourneau-Westinghouse Co., Indianapolis 6, Ind.

Among other things, the movie contains scenes of both the Adams motor graders and the TraveLoader restoring drainage on country roads by cutting off high shoulders and cleaning out ditches.

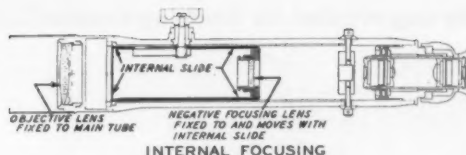
Showings of the film may be arranged with local Adams dealers.

### New Hydraulic Motors

A folder illustrating a new line of hydraulic motors is available from Wisconsin Hydraulics, Inc., 3165 N. 30 St., Milwaukee 16, Wis. Rated for 1,000 psi continuous duty, the gear-type motors develop from 0.10 to 7.5 horsepower.

The lightweight reversible motors are available with a variety of mountings and portings. They are designed for use on road-building machinery and truck-mounted equipment.

To obtain Folder SM-1 write to the company, or use the Request Card that is bound in at page 18. Circle No. 551.



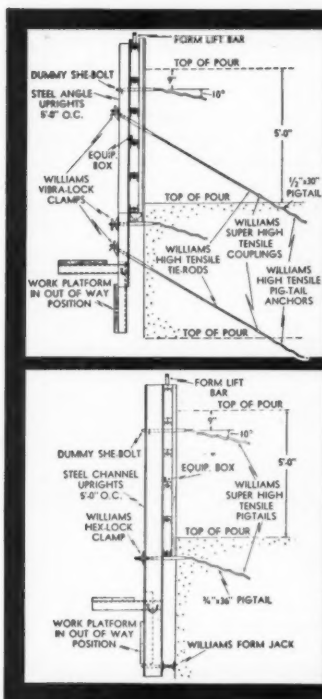
### Transits and Alidades Now Have Internal Focus

All models of Gurley transits and alidades now include the features of internal focusing, W. & L. E. Gurley, Troy, N. Y., announces. Internal focusing, together with the variable-power eyepiece now standard on Gurley transits, makes possible a greater range of magnification than that offered by external-focusing-type instruments.

Among the main advantages found in the internal-focusing instrument

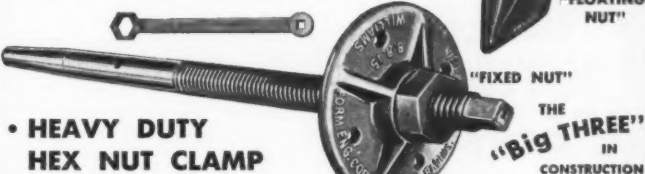
are that the objective lens is stationary, so that the telescope is protected from dust. Another advantage is that the instrument man can eliminate figuring "focal length plus constant" since the stadia can be figured from the center of the instrument instead of in front of the old-style objective lens.

For further information write to the company, or use the Request Card at page 18. Circle No. 408.



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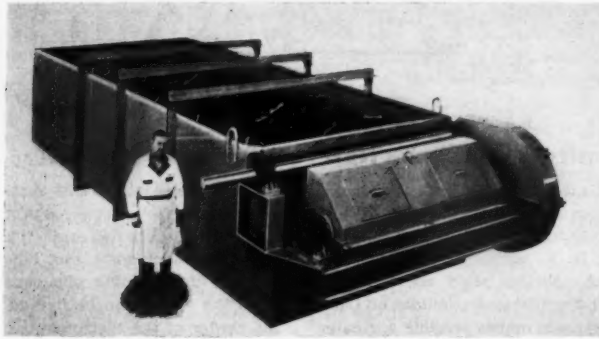
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## Heavy-Duty Log Washer for Cleaning Crushed Rock



■ An extra-large log washer designed for washing stone and crushed rock has been introduced by Eagle Iron Works, 159 Holcomb Ave., Des Moines, Iowa. The diameter of the log, which

consists of the shaft and paddles, is 48 inches. The width is 9 feet 4 inches and tub length 30 feet.

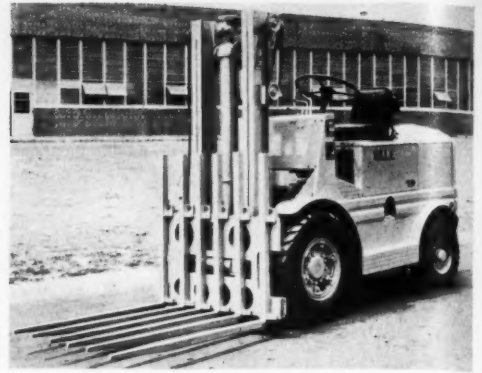
While capacity, of course, depends on the size of material and amount of foreign matter to be removed, the unit is rated at 150 tons per hour. It can handle material up to 8 inches in diameter.

The paddles have replaceable shoes of Ni-Hard nickel-chromium-iron alloy.

For further information write to the company, or use the Request Card at page 18. Circle No. 527.

A \$5 or \$10 food package sent for the assistance of a Korean orphan will make you feel good too. Send your contribution to CARE, 600 First Avenue, New York, N. Y.

Designed to lift concrete and cinder blocks this new multiple fork attachment for Yale & Towne lift trucks uses the bottom layer of blocks to support the entire load.



## Multiple Fork Attachment for Lift Truck Handles Concrete Blocks Without Use of Pallet

■ Standard concrete or cinder blocks can now be handled without a pallet with a multiple fork attachment available from The Yale & Towne Mfg. Co., Philadelphia, Pa. The forks of the attachment enter into the cavities of the bottom layer of blocks so that the blocks themselves support the rest of the load. Each individual fork can be shifted one inch to the left or right to avoid chipping or breaking blocks.

Available for all Yale industrial gas or electric fork trucks, the multiple-fork attachment is easily mounted or removed and does not reduce the truck's rated capacity.

For further information write to Yale & Towne Mfg. Co., 11000 Roose-

velt Blvd., Philadelphia 15, Pa., or use the Request Card at page 18. Circle No. 442.

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What is . . .

**"Bee-Hive" Dovetail Anchor Slot?**

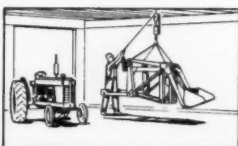
It is the first really new improvement in 25 years for this product. A completely shop-fabricated Dovetail with nothing to put in . . . and nothing to clean out. Yes . . . we said **NOTHING TO CLEAN OUT**. This feature saves contractors from \$20 to \$100 per 1,000 feet. Yet it is priced at no more than any other dovetail anchor slot filled with celotex, twisted paper, spun-glass, cotton-batten and other unsatisfactory fillers. We expect full patent coverages on this spectacular invention to guarantee Architects, Engineers and our selling agents a quality product under this money-saving efficient design.

TELEPHONE  
NEvada 2-1100

## 3 LOADER MODELS to meet your needs

### 1. SHAWNEE LOADMASTER

Like other Shawnee equipment, the LOADMASTER is a rugged, skillfully engineered machine. It is a heavy duty industrial-type loader with double acting, oversize hydraulic system. Raising height is sufficient to clear average dump trucks equipped with sideboards. Down pressure enables handling of hard-packed materials. Bucket capacity,  $\frac{3}{4}$  yard. Available in snow bucket, 76 inches wide, capacity 1 cubic yard. For use on the Fordson Major Diesel Tractor.

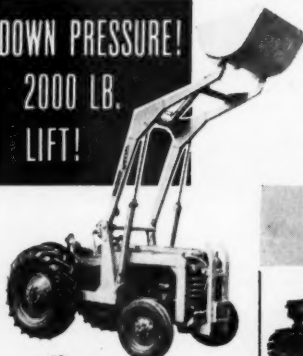


FOR USE ON LARGE TRACTORS

Two-pin hookup means "EASY ON - EASY OFF"! To install the loader, drive the tractor under the loader, insert 2 pins and 2 bolts. It's On! Go to work. To remove, pull 2 pins, 2 bolts and drive out.

### 2. SHAWNEE "SPECIAL" LOADER

**DOWN PRESSURE!**  
**2000 LB. LIFT!**



This model, like the Loadmaster, is of all welded construction and features a two-pin installation that makes possible removal in less than ten minutes. It has double acting cylinders throughout, and an oversize hydraulic system. Dumping height 9 feet. Heavy construction makes it a truly industrial tool. Ideal for installation with Shawnee backhoes and Shawnee Hydro-Clam.

### 3. SHAWNEE SPECIAL "HEAVY DUTY" LOADER



Now available—twin bucket cylinders optional for more powerful tractors such as Ferguson TO-35, Ford 800 and John Deere Crawler (shown).



NATIONWIDE SALES AND SERVICE

**SHAWNEE MANUFACTURING COMPANY, INC.**  
1947 M TOPEKA AVENUE TOPEKA, KANSAS

## Emergency!

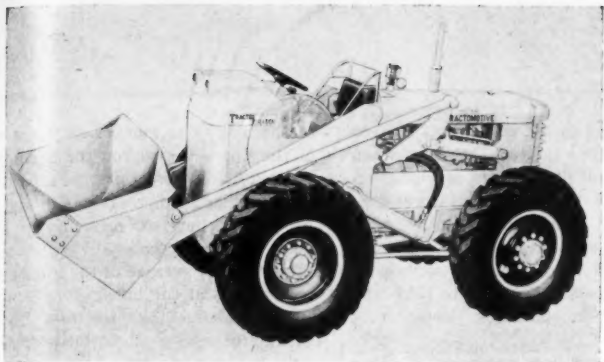
24 hours of torrential rains made a bog of this excavation site for a New York Public School. A Marlow Mud Hog and four small Self-Priming Centrifugal Pumps, working 'round-the-clock, kept the hole workable. For pump information, see your Marlow Dealer or write for Bulletin C-04.

**MARLOW PUMPS**  
Ridgewood, New Jersey  
Division of Bell & Gossett Co.



CONTRACTORS AND ENGINEERS





The Tracto-Loader's new bucket which tips back up to 25 degrees at ground level.

### New Tip-Back Bucket For Tracto-Loader

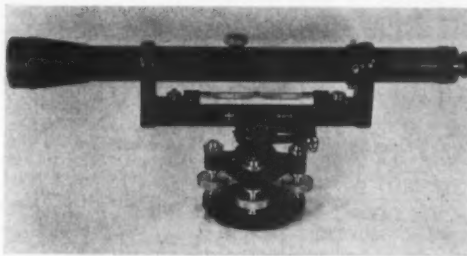
A bucket with as much as 25-degrees of tip-back at ground level is announced by Tractomotive Corp., Deerfield, Ill., for its TL-12 Tracto-Loader. This improvement in design gives the four-wheel-drive 1-cubic-yard loader the ability to do many kinds of loading easier and faster. For example, after getting into the material pile, the operator can scoop or jockey a load into the bucket by operating the tip-back control lever. This is especially useful in small piles of material where the tendency of some standard buckets is to push instead of load.

During the bucket-raising cycle, the amount of tip-back is automatically increased, improving the bucket's ability to retain heaped loads. This results in another important advantage—a practical carrying height of 3 feet, at which the amount of tip-back is 41 degrees. The lower carrying position also affords better operator vision as well as greater balance and stability which, in turn, assist in

keeping the load in the bucket.

For further information write to the company, or use the Request Card at page 18. Circle No. 487.

### Imported Dumpty Level Made to American Specifications



An imported 18-inch dumpty level is announced by the Umeco Optical Division, 465 California St., San Francisco 4, Calif. The 32-power telescope has a minimum focus of 11.5 feet. All interior lens surfaces are coated. The weight of the instrument alone is 9.8 pounds. With the carrying case, it

weighs 18.5 pounds.

The manufacturer emphasizes that the instrument is made under American supervision and to American specifications.

For further information write to the company, or use the Request Card at page 18. Circle No. 409.



### "We've had 17 years of excellent performance on 500 jobs by Cleveland's," says 9-time owner

FRANK BEACH, General Engineering Contractor of Concord, Calif. bought his first Cleveland in 1937. Since then he has bought 8 more Cleveland's and has done over 500 trenching jobs of all kinds with them. Mr. Beach uses only one word to comment on the performance of his Cleveland's—"Excellent."

Shown above is one of two Cleveland's he used to cut 7,000 feet of trench, 2 feet wide by 4½ to 5½ feet deep, for the relocation of a 6-inch domestic water line for the city of Martinez, Calif. in the Pleasant Hill area of Contra Costa County, in rough-graded terrain and adobe soil.

The job called for some careful, accurate, stop-and-go digging alongside an existing 6-inch transite

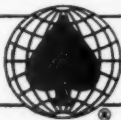
water line. In conditions like these, where a trencher must pick its way through numerous obstructions, Cleveland's famous multi-speed transmission, providing more than 30 useful digging speeds—always under finger tip control by the operator—was a big advantage.

Equally important for profitable trenching operations are the many other recognized advantages of Cleveland's. Full-crawler maneuverability, compactness, versatility, dependability, fast, safe portability—these are just a few of the many reasons why Cleveland's will give you the same excellent performance they have given Frank Beach for over 17 years. And they're . . .

Good Everywhere.

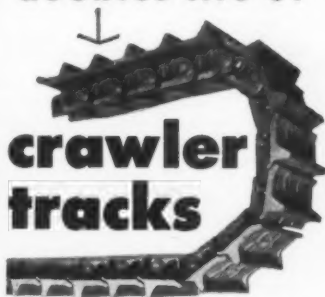
Write for Full Line Cleveland Bulletin or see your Local Distributor

THE CLEVELAND TRENCHER COMPANY • 20100 St. Clair Ave., Cleveland 17, Ohio



# CLEVELAND

### New design doubles life of



There are two reasons for the spectacular record of KENSINGTON crawler tracks wherever they have been tested . . . (1) improved design, and (2) superior wear-resisting alloyed manganese steel.

**First . . .** KENSINGTON engineers have designed a one-piece rail that ends the twisting and weaving which contributes to so much wear in ordinary tracks. Further rigidity and near-perfect alignment is gained by use of heat-treated alloy pins pressed tightly in place under high pressure. Grousers are heavy-duty at all vulnerable parts to resist bending and breaking.

Yet, despite these important design changes, KENSINGTON rails and grousers are interchangeable with the original parts furnished with your tractor.

**Second . . .** the hard, KENSINGTON-developed alloyed manganese steels actually fight back against wear. They constantly develop extra surface hardness when exposed to friction, abrasion and impact.

KENSINGTON tracks arrive from the factory ready-assembled.

**Learn** for yourself how KENSINGTON tracks will lower your crawler maintenance costs and improve your operating efficiency. Coupon will bring details.



## Kensington

STEEL COMPANY

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KENSINGTON STEEL CO.

Dept. A 505 Kensington Ave., Chicago 28, Ill.

Please send information on crawler tracks for tractor described below. I understand I will be under no obligation.

Make of tractor \_\_\_\_\_

Model \_\_\_\_\_ No. tracks per belt \_\_\_\_\_

Width of grouser \_\_\_\_\_

NAME \_\_\_\_\_

COMPANY \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_

STATE \_\_\_\_\_

ZONE \_\_\_\_\_

STATE \_\_\_\_\_

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# WEATHER CHARTS

## The Weather Picture for April

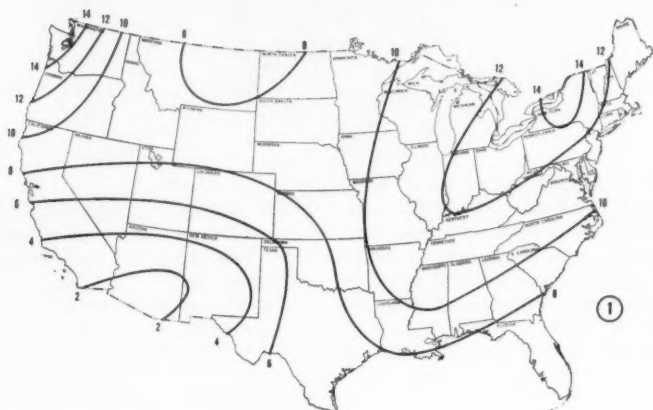


Chart 1. Days with .01 inch or more of precipitation

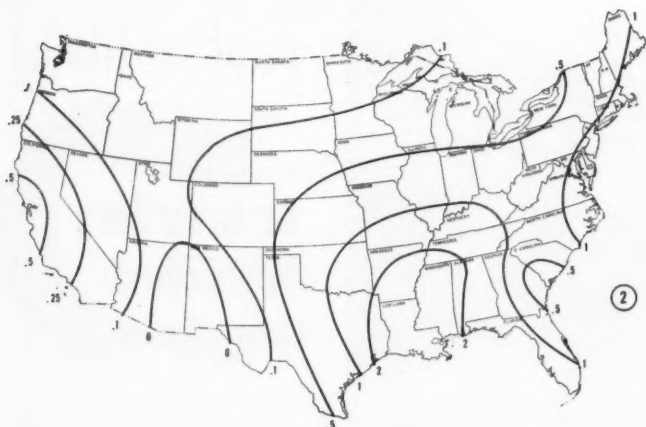


Chart 2. Days with 1 or more inches of precipitation.

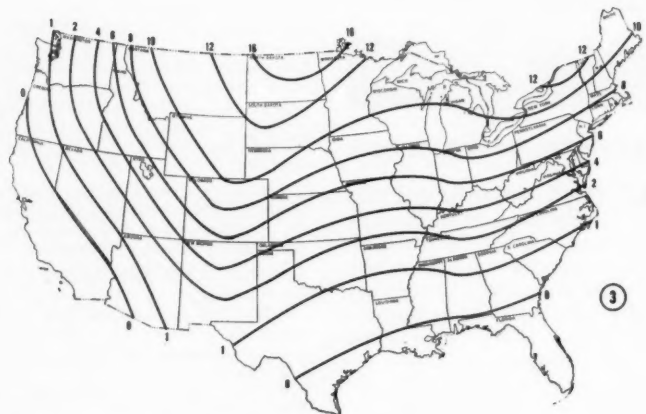


Chart 3. Days with temperatures below freezing.

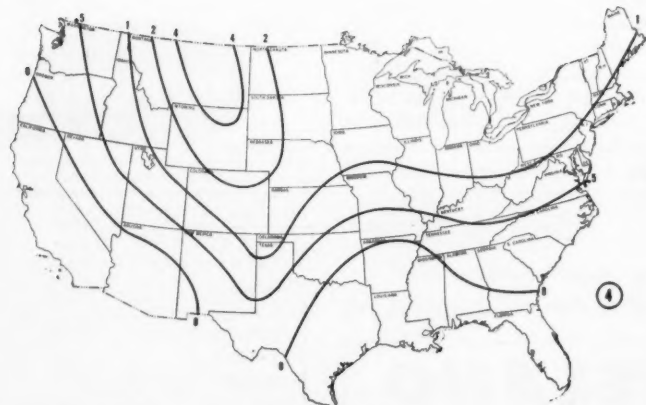


Chart 4. Days with 1 or more inches of snowfall.

The four charts on the left half of this page indicate the average number of days with precipitation and below-freezing temperatures during April. Prepared by the Weather Corporation of America, they are presented as a monthly service by *Contractors and Engineers* to help contractors in planning their work month.

The black lines numbered at either end show the average number of days in April when areas through which the lines cross have precipitation or temperatures as described under each map. Lines marked with decimals (as in charts 2 and 4) must be translated into a proportionate number of years. Thus, in chart 2, the lines marked .5, .25, and .1 indicate days with 1 or more inches of precipitation occurring once in 2, 4, and 10 years, respectively.

To determine the weather picture in your city or area, follow the black line nearest your locality to the edge

of the map. The number at the end of the line will give you the average number of days with precipitation or below-freezing temperatures (depending on the chart) for next month. If your area lies midway between two lines, take an average of the numbers at the ends of the lines.

For example, take the case of a contractor with a job in Little Rock, Ark. Rainfall of any consequence or freezing temperatures can halt his operations. Chart 1 tells him that he might expect some rain on 10 of the 30 days in April. Chart 3 tells him that the area has an average of one day of freezing temperatures in April. These give him an average total for the month of 11 lost work days with which to reckon.

While not specific forecasts, the data contained in these charts set forth average weather conditions as determined from the records of 50 weather stations throughout the country.

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with  
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**FLINTKOTE CPS** . . . cold-poured type rubber-asphalt joint sealer for use in joint sealing of concrete pavement . . . pumped into joints under pressure. (Meets Fed. Spec. SS-S-159, C.A.A. P-615 and others.)



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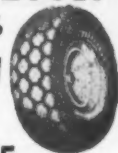
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### POWER AUTHORITY OF THE STATE OF NEW YORK

## ADVERTISEMENT FOR PROPOSALS

### FOR

### CONSTRUCTION OF

BARNHART ISLAND POWER PLANT  
NEAR MASSENA, ST. LAWRENCE COUNTY, NEW YORK  
SPECIFICATION NO. PA-5-11001  
ST. LAWRENCE CONTRACT NO. 9

**NOTICE TO CONTRACTORS:** The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the construction of Barnhart Island Power Plant and appurtenant works near Massena, St. Lawrence County, New York until 10:30 A.M. Eastern Standard Time on the 15th day of April, 1955 at the Authority's office, 270 Broadway, Room 1207A, New York 7, New York, at which time and place proposals will be publicly opened and read aloud.

The principal items of work are:

|                               |   |
|-------------------------------|---|
| Estimated: 1,802,500 cu. yds. | Embankment and riprap for forebay dike and access roads |
| 260,200 cu. yds.              | Miscellaneous fills                                     |
| 1,630,200 cu. yds.            | Earth excavation  |
| 415,000 cu. yds.              | Borrow excavation                                       |
| 195,000 cu. yds.              | Rock excavation for power plant                         |
| 142,400 lin. ft.              | Drill holes for exploration and grouting                |
| 890,100 cu. yds.              | Concrete  |
| 18,730 tons                   | Reinforcing steel                                       |
| 2,908 tons                    | Structural and miscellaneous steel                      |
| 9,174 tons                    | Erection of gates, trashracks, stop logs and cranes     |
| 11,000 tons                   | Erection of hydraulic turbines                          |
| 16,000 tons                   | Handling of generator parts and electrical equipment.   |

The work shall be completed on or before December 30, 1956.

Plans, specifications and Proposal Forms for the work will be on file in the Authority's office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and the Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario, and may be inspected by prospective bidders during office hours.

Plans, specifications and Proposal Forms may be obtained from the Power Authority of the State of New York, 270 Broadway, Room 1207A, New York 7, New York, upon application and prepayment of a fee of Fifty (\$50.00) dollars per initial set and Twenty-five (\$25.00) dollars per set for additional sets, no part of which will be refunded.

Bids must be made in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 10 percent of the gross sum bid except that guarantee in excess of \$2,000,000 will not be required.

The right is reserved to reject any or all bids.

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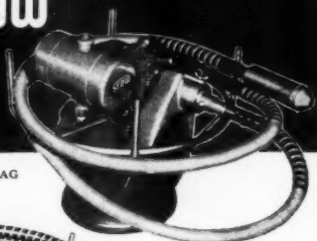
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## New performance features built into **STOW** CONCRETE VIBRATORS

MODEL AG



SHOWN: MODEL BGW. This is the standard STOW model BG vibrator, mounted on wheelbarrow for easy maneuverability. Model BG & BGW feature 2 HP 4 cycle, air-cooled engine; ball-bearing eccentric belt tensioner.

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# STOW

MANUFACTURING CO.

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## This employees' locker building

STARTED OUT 12' LONG



# HANDY-HUT

ALL-STEEL

Building of 1000 uses

The basic USF Handy-Hut is 10' x 12' but can be combined or altered to suit hundreds of applications. This construction job locker building, for instance, started with just one Handy-Hut and was extended until it was 108' long with interior partitions that made it exactly fit the need.

The all-steel USF Handy-Hut is extensible in length in 2' segments up to any length and offers a wide variety of interchangeable side panels or end panels to let you create your own combination for your purpose.



## 100% PORTABLE

Use on Job after Job

USF's exclusive clip-and-wedge method of erection (no screws, bolts or riveting) allows you to dismantle the building without any loss... transport anywhere... use again and again. Many are built on skids and dragged to new locations in the field.

WRITE for descriptive literature on the USF Handy-Hut.



UNITED STEEL FABRICATORS, INCORPORATED  
WOOSTER, OHIO

## MANUFACTURER MEMOS

### Ralph W. Heer Elected Pioneer Vice President

The works manager of Pioneer Engineering Works, Inc., Minneapolis, Minn., Ralph W. Heer, has been elected vice president of manufacturing for the company. A graduate of the University of Minnesota School of Technology, Mr. Heer has been with Pioneer for 17 years, serving in various positions.

Working first in the company's shop, he was soon transferred to the

engineering department, where he served successively as engineer, acting chief engineer, and chief engineer. Before becoming works manager, he was general superintendent for the manufacturer of conveying, feeding, crushing, and washing equipment used in road building.

A number of other appointments at Pioneer include those of Harold E. Rollin as director of research and development, Stanley J. Owens as manager of sales engineering, J. Loren Tripp as manager of parts



Ralph W. Heer, new vice president of manufacturing for Pioneer Engineering Works.

records, and Thomas O. Eggen as assistant manager of the sales promotion department.

### Executive Reorganization At Universal Atlas

Four changes in the executive organization of Universal Atlas Co., New York, N. Y., subsidiary of U. S. Steel Corp., have been effected.

Gordon C. Huth has been elected to the newly created position of vice president in charge of industrial relations. Vice president Louis M. Funderburg will assume the responsibility for engineering activities, in addition to his present direction of operating, purchasing, and tests and research. W. Owen Lawrence is assistant vice president of operations, and Raymond L. Walsh is assistant vice president in charge of the engineering division.

The former vice president in charge of engineering, Henry P. Reid, will be retained by the company in a consulting capacity, although he has retired from active duty with the firm.

### Westinghouse Names Head Of Engineering, Research

Dr. Franklin E. Lowance has been appointed to the newly created position of director of research and engineering by the Westinghouse Air Brake Co., Pittsburgh, Pa., and will be responsible for coordinating the research and engineering activities of all subsidiaries and divisions of the company.

Holder of a Ph.D. degree, Dr. Lowance is a former professor of physics and engineering at Centenary College, Louisiana, and Georgia Institute of Technology. During World War II, he served with the Office of Scientific Research and Development, and in 1953, became associate technical director at the U. S. Naval Ordnance Test Station at China Lake, Calif.

### Marion Power Shovel Co. Appoints Vice President

D. E. Rizer has been appointed to the position of vice president in charge of sales and service for the Marion Power Shovel Co., Marion, Ohio. He will be responsible for the sales and service of the entire line of Marion-Osgood-General equipment in both domestic and export markets.

A member of the Marion organization for 29 years, Mr. Rizer was formerly vice president in charge of service, parts, and pricing. His present appointment is a result of the consolidation of Marion Power Shovel Co. and the Osgood Co., and is part of a long-term program for the expansion of company operations.

Assisting Mr. Rizer is Richard M. Bessom, export sales manager, who will be in charge of sales of the complete line of machines.

### Barrett to Represent Sika Chemical Corp.

Cornelius R. Barrett has joined the sales staff of Sika Chemical Corp., manufacturer of concrete admixtures and joint-sealing compounds, to represent the company in the New York City area.

Mr. Barrett, with 30 years of field experience in specialized types of concrete construction, most recently supervised work on the buoyant boxes which support dead load on the new Tappan Zee bridge in New York. Prior to that, he assisted in construc-

### HYDRAULIC OPERATED SCRAPERS



H-61 Scraper, Capacity 5.6 yds.  
40 to 45 Drawbar H.P.



H-65 Scraper, Capacity 6.4 yds.  
45 to 50 Drawbar H.P.



H-85 Scraper, Capacity 8.7 yds.  
60 to 70 Drawbar H.P.

ATECO Hydraulic 4-Wheel Scrapers get bigger payloads and are designed for moving more yardage per trip. Fast "boiling-bowl" loading\* positive ejection\* low center of gravity\* rugged\* economical to maintain. Performance high — initial cost low.



Manufactured by

**GREENVILLE STEEL CAR COMPANY**  
Greenville, Pennsylvania

### "On the Job" Offices

Sturdy trailers for field offices, drafting and blue print rooms, tool cribs, laboratories and housing for key men who must be close to your operation. Shells, complete with windows, venetian blinds, fixtures, 30" exterior doors, oil burner with return ducts in floor—as low as \$1724.

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**PONTIAC COACH CO.**  
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Five 156-Foot Double Well

**HEAVY-DUTY ARCHER TOWERS**

Complete with cages, concreting equipment, and Chicago boom. Condition excellent. Location, Dearborn.

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### The Outstanding Steel Tape for On-the-Job Durability

The Lufkin "Leader" Steel Tape is Chrome Clad — many times more durable because the fine steel line is built up by Lufkin's exclusive process with a series of electro-platings. These platings strengthen the line, make it resistant to rust and corrosion, and protect the jet black markings that are easy-to-read against the satin chrome-white background. Line won't chip, peel or crack. Metal case is rust resistant coated, covered with durable maroon vinyl. Available in 25', 50', 75' and 100' lengths. Choice of standard or folding hook ring. Get more for your money — get the Lufkin Leader.



265

BUY **LUFKIN**

TAPES — RULES — PRECISION TOOLS From Your Supply House  
THE LUFKIN RULE CO., SAGINAW, MICH. — New York City — Barrie, Ont.



tion of the buoyant boxes for the city's newly opened Pier 57. In 1949 he became associated with the consulting engineering firm of Madigan-Hyland, following his assignment as supervisor of construction for a reinforced-concrete single-unit floating drydock in Montevideo, Uruguay. Mr. Barrett also supervised concrete tests in connection with the wartime concrete ship program for the American Bureau of Shipping.

#### Hough Names Gilbertson Executive Vice President

The former vice president in charge of sales, advertising, and service for The Frank G. Hough Co., G. A. Gilbertson, has been promoted to the position of executive vice president and general manager of the Liberty-



Executive vice president and general manager of The Frank G. Hough Co., G. A. Gilbertson.

ville, Ill., firm. He will assist Frank G. Hough, president of the company, with management and policy matters.

R. L. Beyerstedt, previously vice president and chief engineer, was at the same time promoted to the post of vice president in charge of engineering and product development. Mr. Beyerstedt will also be responsible for part of the accelerated product-development program for the concern, manufacturer of Payloader tractor-shovels and towing tractors.

#### Duff-Norton Names Dixon

The new chief engineer of Duff-Norton Mfg. Co., Pittsburgh, Pa., manufacturer of lifting jacks, is John J. Dixon. He succeeds Frank H. Schwerin who has retired. Mr. Dixon joined Duff-Norton in 1943 after having served in the engineering department of the Edwin L. Wiegand Co. He holds a degree in mechanical engineering in Carnegie Institute of Technology.



John J. Dixon, new chief engineer at Duff-Norton Mfg. Co.

#### C. I. T. Promotes Two

The C. I. T. Corp., industrial financing firm of New York, N. Y. has promoted William G. Cathcart to the post of regional vice president, supervising the firm's operations in a 21-state area from Canada to Mexico. Division offices in Chicago, Kansas City, Houston, and Memphis will be under his direction.

Donald E. Kidd will succeed Mr. Cathcart as assistant vice president of the corporation and head of the Chicago office.

Both Mr. Cathcart and Mr. Kidd will make their headquarters at the Chicago office of the company, subsidiary of C. I. T. Financial Co.

#### LeTourneau-Westinghouse Honors Two Service Men

O. C. Zachary of Greenville, S. C., and Vernon Slade of Denver, Colo., have been named the outstanding service engineers of 1954 by the LeTourneau-Westinghouse Co., Peoria, Ill. Awards were presented to the two men by John W. Schoen, vice president and general sales manager.

A company representative in the South Carolina-Georgia area, Mr. Zachary has been with LeTourneau-Westinghouse since 1940. Mr. Slade represents the company in the Rocky Mountain area.

#### Russell Is Appointed Joy Vice President

The Joy Mfg. Co., Pittsburgh, Pa., has appointed John D. Russell vice president in charge of engineering. He will make his headquarters at Joy's executive offices in the Oliver Building in Pittsburgh.

# "They move plenty of dirt

...and they have that **CAT\*** dependability"



A county road south of Bloomington, Kansas, had to be straightened. Fill for the job—some 70,000 yards of clay and loam—were to come from changing Kill Creek's channel . . . a big assignment that called for fast-stepping heavy-duty machines. G. W. Christolear, of Heide & Christolear Construction Co., Smith Center, Kansas, says, "We looked the earthmoving equipment field over, watched all makes of rubber-tired machines, talked to the owners, and settled on Caterpillar DW15s. The fact that they move plenty of dirt and have that Cat dependability convinced us."

The DW15s on this job haul heaped loads in their No. 15 Scrapers, making an 800-yard round trip in just over four minutes. They go ten hours a day on only 35 gallons of fuel.

These 150-HP four-wheeled workhorses are designed and built for tough, fast, economical work. They offer ten forward speeds to 24 m.p.h.—to 31.3 m.p.h. with optional gears. They perform especially well in narrow, confined

areas. And they work smoothly with a complete line of matched units—with scrapers, and with bottom dump and side dump wagons.

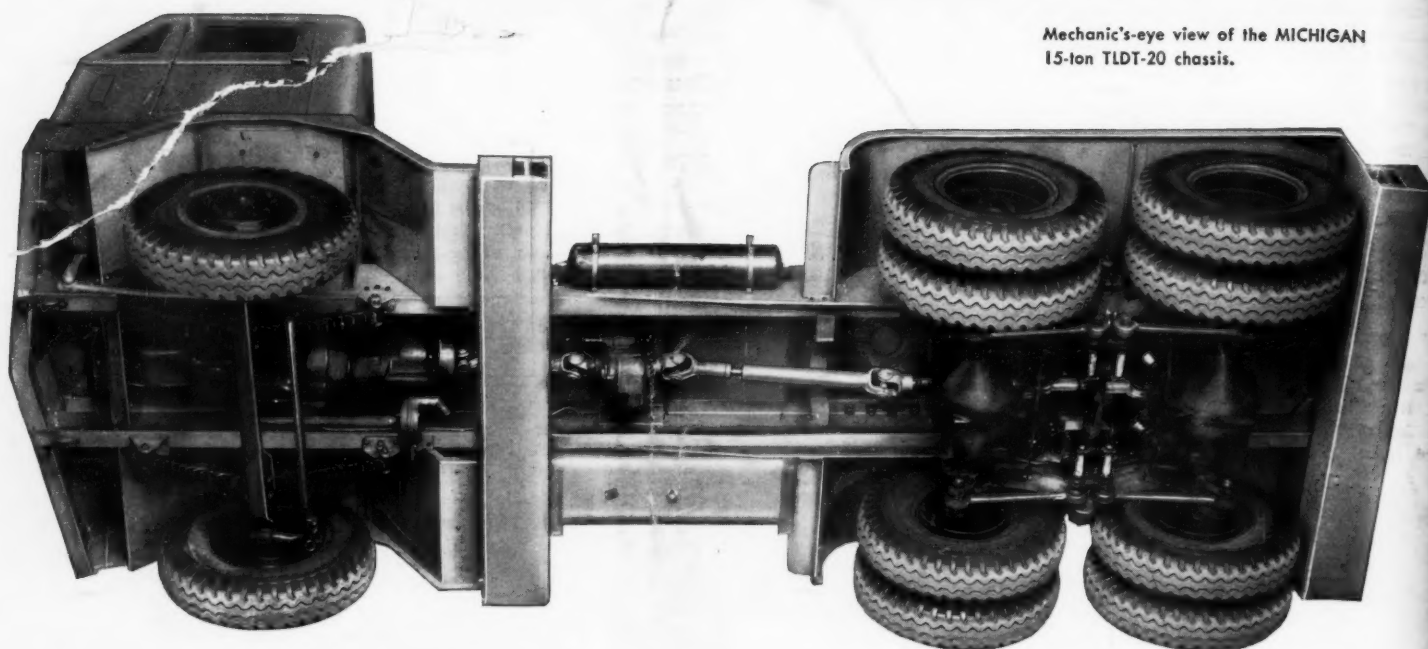
But only a real demonstration can show you the DW15's advantages. Call your Caterpillar Dealer today. And remember, he's always handy with competent service and genuine factory parts—parts you can trust.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

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\*Both Cat and Caterpillar are registered trademarks—(H)

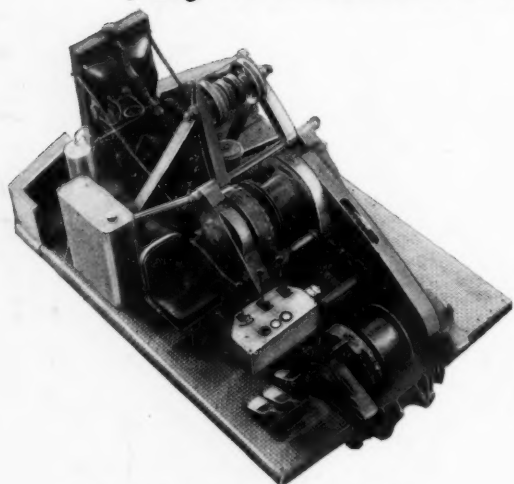
**NAME THE DATE...  
YOUR DEALER  
WILL DEMONSTRATE**



Mechanic's-eye view of the MICHIGAN 15-ton TLDT-20 chassis.

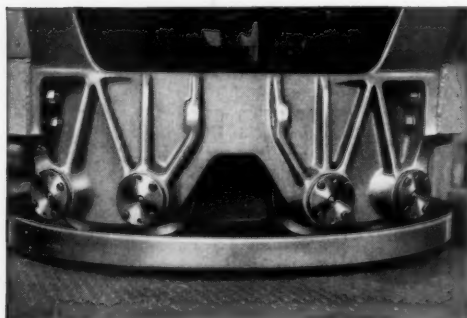
## NEWS!... More Quality Features

are Standard Equipment on **MICHIGAN**  
*1/2 yard models than on any comparable machine*



The basic 1/2-yard turntable mechanism —maximum service accessibility.

Front-view of four of the MICHIGAN's six adjustable hook rollers.



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**16-Ton Axles**—tremendous strength! No wonder your MICHIGAN stands years of punishment.

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**Power Up and Power Down**—on the front drum for precision crane work.

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